



March 12, 2009

Mr. Philip Allen
Remedial Project Manager
USEPA
1445 Ross Ave.
Suite 1200
Dallas, TX 75202-2733

RE: Final Response to Comments on the COPC Report
Patrick Bayou Superfund Site – Deer Park, TX

Dear Mr. Allen:

On behalf of the Patrick Bayou Joint Defense Group (JDG) and pursuant to the Administrative Settlement Agreement and Order on Consent (AOC) for Remedial Investigation/Feasibility Study (RI/FS) at the Patrick Bayou Superfund Site in Deer Park, TX, attached please find the final Response to Comments on the Contaminants of Potential Concern (COPC) Report. These Responses address the comments from TCEQ dated December 10, 2008 and we believe should resolve any and all outstanding comments on the COPC Report.

Should you have any questions please feel free to contact me at 919-435-0934.

Sincerely,

s/R Piniewski

Robert Piniewski
Project Coordinator

cc: Agency Distribution List
Patrick Bayou JDG

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MEMORANDUM

To: Philip Allen, RPM USEPA Region 6 **Date:** March 6, 2009

From: David Keith, David Haury, and Jason Kase, **Project:** 040284-01
Anchor QEA, LLC

Cc:

Re: Response to Comments on *Amendment to the Selection of COPCs for Ecological Risk Assessment Technical Memorandum, Patrick Bayou Superfund Site, Deer Park, Texas*

BACKGROUND AND PURPOSE

Anchor Environmental, LLC, (Anchor) currently operating as Anchor QEA, submitted a *Draft Selection of Contaminants of Potential Concern [COPC] for Ecological Risk Assessment, Patrick Bayou Superfund Site, Deer Park, Texas* on behalf of the Patrick Bayou JDG to in April 2008. Based on comments received from the U.S. Environmental Protection Agency (USEPA), Texas Commission on Environmental Quality (TCEQ), and State and federal trustees, Anchor submitted *Amendment to the Selection of Contaminants of Potential Concern for Ecological Risk Assessment Technical Memorandum, Patrick Bayou Superfund Site, Deer Park, Texas* on behalf of the JDG in October 2008. Comments on the amendment document were received from TCEQ through an interoffice memorandum dated December 10, 2008 (Attachment A). This memorandum is the response to comments from TCEQ in the December 10, 2008, interoffice correspondence. These responses and attached tables should resolve all outstanding issues regarding the development of the Contaminants of Potential Concern for use in the Site Baseline Ecological Risk Assessment (BERA), and the attached tables are viewed as a summary of the final COPC selection for the BERA.

RESPONSE TO COMMENTS

Comment #1

4.3 Exposure Assessment – For this amendment, both dietary and incidental sediment ingestion were included in estimates of exposure for wildlife receptors (for bioaccumulative

chemicals). According to the discussion, exposure was characterized using a daily intake model to calculate daily intake of COPCs using equation 4-1 (page 14) as adapted from the USEPA's *Wildlife Exposure Factors Handbook*. The JDG should provide more discussion as to how this equation was adapted from the equations and related discussions in the *Wildlife Exposure Factors Handbook*. See related e-mail comment/question number 5.

Response #1

The form of the total daily intake equation in the amendment is:

$$TDI = \left[FMR \times \left(\frac{C_t \times PD}{AE \times GE} \right) + (C_s \times IR_s) \right] \times AUF \quad \text{Equation 4-1}$$

Where:

- TDI = Total Daily Intake (mg/kg bw/day)
C_t = Concentration in prey (mg/kg WW)
FMR = Normalized free metabolic rate (Kcal/kg BW/day)
GE = Gross energy of prey class group (Kcal/kg)
AE = Assimilation efficiency for prey (unitless)
C_s = Concentration in sediment (mg/kg DW)
IR_s = Ingestion rate of sediment (kg DW/kg BW/day)
AUF = Area use factor (unitless)
PD = Proportion of prey item in diet (unitless; > 0 and <= 1)

To illustrate the application of this equation relative to those in the *Wildlife Exposure Factors Handbook* (WEFH; USEPA 1993), an example using a hypothetical receptor will be used to step through Equation 4-1 and through the specific equations in the WEFH.

Hypothetical Receptor:

FMR = 0.20 kcal/g-bw/day

Body weight = 1000 g

Diet: fish and invertebrates

C_{fish} = 10 mg/kg WW (=0.000010 g/g)

C_{inverts} = 15 mg/kg WW (=0.000015 g/g)

PD_{fish} = 0.4

$PD_{inverts}$	=	0.6
GE_{fish}	=	1.2 kcal/g
$GE_{inverts}$	=	0.95 kcal/g
AE_{fish}	=	0.9
$AE_{inverts}$	=	0.8
C_{sd}	=	20 mg/kg DW (=0.000020 g/g)
P_{sd}	=	0.10 [Equivalent to FS term in WEFH Equation 4-23]
CF_3	=	0.4 (fraction solids in sediment)

To express equation 4-1 in Anchor (2008) more specifically:

$$TDI = \left[FMR \times \left\{ \left(\frac{C \times PD}{AE \times GE} \right)_{fish} + \left(\frac{C \times PD}{AE \times GE} \right)_{inverts} \right\} + (C_{sd} \times IR_s) \right] \times AUF$$

For this equation, the $IR_{sediment}$ term was calculated using equation 4-3 in Anchor (2008):

$$IR_{sediment} = \left[\left(\frac{FMR}{AE \times GE} \right)_{fish} + \left(\frac{FMR}{AE \times GE} \right)_{inverts} \right] \times CF_3 \times P_{sd}$$

Where:

$IR_{sediment}$	=	Ingestion rate of sediment (mg DW/kg BW/day)
CF_3	=	Wet weight to dry weight conversion factor (CF_3 = fraction solids in sediment)
$P_{sediment}$	=	Proportion of sediment relative to food ingestion rate (DW basis; $g_{sediment,DW}/g_{food,DW}$)

NOTE: The equation in this form is not correct; this equation attempts to provide $IR_{sediment}$ on a dry weight (DW) basis, which is the desired form for this equation. However, the dietary parameters (fish and inverts) must be converted from wet weight (WW) to DW using conversion factors based on the fraction solids in the dietary items (fish and inverts) rather than the fraction solids in sediment, which is what is used in the equation above. As such, the IR_{food} terms [$FMR/(AE \times GE)$] should be converted to a DW basis in this equation. The revised form of Anchor (2008) equation 4-3 is:

$$IR_{sediment} = \left[\left\{ \left(\frac{FMR \times PD}{AE \times GE} \right)_{fish} \times CF_1 \right\} + \left\{ \left(\frac{FMR \times PD}{AE \times GE} \right)_{inverts} \times CF_2 \right\} \right] \times P_{sd}$$

Where:

- $IR_{sediment}$ = Ingestion rate of sediment (g DW/g BW/day)
- CF_1 = Wet weight to dry weight conversion factor for fish (0.29 DW/WW; taken from percent water for bony fish species (USEPA 1995; Table 4-1)
- CF_2 = Wet weight to dry weight conversion factor for invertebrates (0.21 DW/WW; taken as average for all aquatic invertebrates (USEPA 1995; Table 4-1)
- $P_{sediment}$ = Proportion of sediment relative to food ingestion rate (DW basis; $g_{sediment} / g_{food}$)

$$IR_{sediment} = \left[\left\{ \left(\frac{0.2 \times 0.4}{0.9 \times 1.2} \right)_{fish} \times 0.29 \right\} + \left\{ \left(\frac{0.2 \times 0.6}{0.8 \times 0.95} \right)_{inverts} \times 0.21 \right\} \right] \times 0.10$$

$$IR_{sediment} = 0.00546 \text{ gDW / gBW / day}$$

For Anchor (2008) Equation 4-1

$$TDI = \left[FMR \times \left\{ \left(\frac{C \times PD}{AE \times GE} \right)_{fish} + \left(\frac{C \times PD}{AE \times GE} \right)_{inverts} \right\} + (C_{sd} \times IR_s) \right] \times AUF$$

$$TDI = \left[0.2 \times \left\{ \left(\frac{0.000010 \times 0.4}{0.9 \times 1.2} \right)_{fish} + \left(\frac{0.000015 \times 0.6}{0.8 \times 0.95} \right)_{inverts} \right\} + (0.000020 \times 0.00465) \right] \times 1$$

$$TDI = 3.22 \times 10^{-6} \text{ g / g}_{BW} / day$$

$$TDI = 3.22 \text{ mg / kg}_{BW} / day$$

For the WEFH (USEPA 1993), the following equations would be used:

$$ADD_{pot} = \sum_{k=1}^m (C_k \times FR_k \times NIR_k) \quad [\text{WEFH Equation 4-8}]$$

Where:

- ADD_{pot} = potential average daily dose ($g_{COPC}/g_{BW}/day$; equivalent to TDI)
- C_k = Contaminant concentration in k^{th} type of food
- FR_k = Fraction of k^{th} type of food that is contaminated (in this example value is equal to 1.0)
- NIR_k = normalized ingestion rate of k^{th} type of food on WW basis ($g_{food}/g_{BW}/day$)
- M = Number of contaminated food types (in this example $m=2$; fish and invertebrates)

As such, WEFH (1995) equation can be rewritten as:

$$ADD_{pot} = (C \times NIR)_{fish} + (C \times NIR)_{inverts}$$

For receptors with more than one distinct type of food (i.e., $k>1$), the NIR term can be calculated using the following equations:

$$NIR_{total} = \frac{NFMR}{ME_{avg}} \quad [WEFH \text{ Equation 4-11}]$$

Where:

- NIR_{total} = Total normalized ingestion rate ($g/g_{BW}/day$)
- $NFMR$ = Free-living metabolic rate normalized to body weight (equivalent to FMR term as presented in Anchor (2008))
- ME_{avg} = Average metabolizable energy of the total diet on a wet weight basis ($kcal/g$)

The ME_{avg} term is calculated by:

$$ME_{avg} = \sum_{k=1}^m (P_k \times ME_k) \quad [WEFH \text{ Equation 4-12}]$$

Where:

- P_k = Proportion of the diet consisting of the k^{th} food type on a WW basis
- ME_k = Metabolizable energy of the k^{th} food type on a WW basis

ME_k term can be calculated using Equation 4-13 in Figure 4-4 of WEFH:

$$ME_k = GE_k \times AE_k \quad [\text{WEFH Equation 4-13}]$$

Where:

GE_k = Gross energy content of k^{th} food type in WW

AE_k = Assimilation efficiency for the k^{th} species

Finally NIR_k is calculated by:

$$NIR_k = P_k \times NIR_{total} \quad [\text{WEFH Equation 4-10}]$$

In this example, ADD_{pot} (TDI) would be calculated as follows:

$$ME_{fish} = GE_{fish} \times AE_{fish} = 1.2 \times 0.9 = 1.08 \text{ kcal/g}_{fish}$$

$$ME_{inverts} = GE_{inverts} \times AE_{inverts} = 0.95 \times 0.8 = 0.76 \text{ kcal/g}_{fish}$$

$$ME_{avg} = (P_{fish} \times ME_{fish}) + (P_{inverts} \times ME_{inverts}) = (0.4 \times 1.08) + (0.6 \times 0.76) = 0.888 \text{ kcal/g}$$

$$NIR_{total} = \frac{NFMR}{ME_{avg}} = \frac{0.2}{0.888} = 0.225 \text{ g}_{prey}/\text{g}_{BW}/\text{day}$$

$$NIR_{fish} = NIR_{total} \times P_{fish} = 0.225 \times 0.4 = 0.09 \text{ g}_{fish}/\text{g}_{BW}/\text{day}$$

$$NIR_{inverts} = NIR_{total} \times P_{inverts} = 0.225 \times 0.6 = 0.135 \text{ g}_{inverts}/\text{g}_{BW}/\text{day}$$

$$ADD_{pot} = (C \times NIR)_{fish} + (C \times NIR)_{inverts} = (0.000010 \times 0.09) + (0.000015 \times 0.135) = 0.00000293 \text{ g/g}_{BW}/\text{day}$$

$$ADD_{pot} = 2.93 \text{ mg/kg}_{BW}/\text{day}$$

To account for incidental sediment ingestion, the follow equation is recommended in the WEFH:

$$ADD_{pot} = \left(\sum_{k=1}^m (C_k \times FS \times IR_{total} \times FR_k) \right) / BW \quad [\text{WEFH Equation 4-23}]$$

Where:

ADD_{pot} = Potential average daily dose

C_k = Concentration in the k^{th} foraging area on a DW basis

FS	=	Fraction of sediment in diet (as percentage of diet on a DW basis)
IR _{total}	=	Food ingestion rate on a DW basis. For equations using estimating IR _{total} on a WW basis, conversion to DW ingestion rates would be necessary
FR _k	=	Fraction of total food intake from k th foraging area
BW	=	Body weight
m	=	Number of foraging areas (in this example m=1)

In this example NIR_{fish} and NIR_{inverts} are converted to a DW basis using average percent dry matter for each class using values described above for the Anchor (2008) example (i.e., CF₁ and CF₂). As such the equation for incidental sediment ingestion can be expressed as:

$$IR_{fish} = NIR_{fish} \times BW \times CF_1 = 0.09 \times 1000 \times 0.29 = 26.1 g_{DW} / day$$

$$IR_{inverts} = NIR_{inverts} \times BW \times CF_1 = 0.09 \times 1000 \times 0.21 = 28.4 g_{DW} / day$$

$$ADD_{pot} = (C \times FS \times IR_{total}) / BW = (0.000020 \times 0.10 \times (26.1 + 28.4)) / 1000$$

$$ADD_{pot} = 0.0000001 g / g_{BW} / day = 0.100 mg / kg_{BW} / day$$

Summing exposure through the diet and incidental ingestion, the ADD_{pot}(TDI) in this example using the WEFH equations is:

$$ADD_{pot,total} = ADD_{pot,diet} + ADD_{pot,se din ent} = 2.93 + 0.100 = 3.03 mg / kg_{BW} / day$$

Comparing the results, a slight difference (relative percent difference of 6 percent) is observed, most likely due to rounding. This difference is not considered significant.

Comment #2

4.3.1.2 Gross Energies and Assimilation Efficiencies – Looking at the basis for the assimilation efficiencies (Table 4-3) for the various receptors, generally a 5th percentile value was used based on mean and standard deviation values from the U.S. EPA's Wildlife Exposure Factors Handbook. The assimilation efficiency for carnivorous birds (average and standard deviation) was assumed to be that for waterfowl consuming aquatic invertebrates (77% average, 8.4% standard deviation) using the Karasov (1990) reference indicated in the Wildlife Exposure Factors Handbook (page 4-15). The JDG should provide more discussion as to why the use of these values is an appropriately conservative surrogate for the

assimilation efficiency associated with birds of prey consuming fish. See related e-mail comment/question number 3.

Response #2

The carnivorous wading bird receptor (Great Blue Heron) was assumed to have a diet primarily of fish. As noted, the assimilation efficiency (AE) value chosen was for waterfowl consuming aquatic invertebrates. In the WEFH, essentially two choices for AE values for birds consuming aquatic prey are available. An average AE of 79 percent (4.5 percent standard deviation) for eagles and seabirds consuming fish and for waterfowl consuming aquatic invertebrates (77 percent average, 8.4 percent standard deviation). Either AE would be reasonable and relevant choices for this guild as most members of this guild include some fish and invertebrates in their diet. The choice of the waterfowl consuming invertebrates is a conservative choice as a lower AE value, both at the average and lower tail (i.e. 5th percentile) of the distribution, would lead to a larger ingestion rate (IR) relative to the seabird consuming fish value. Differences between these two choices of AE are small both at the average 5th percentile are small (2 percent or less) regardless of which AE is chosen. As a result, the choice of the waterfowl consuming invertebrates AE is a conservative choice, albeit marginally so. The choice of AE for this guild will be re-evaluated in the BERA but regardless of AE basis, should not dramatically affect the estimates of exposure. Any changes to the AE will be discussed in the BERA Work Plan.

Comment #3

4.3.1.4 Proportion of Prey Items in Diet – Prey items (Table 4-4) were organized into various prey classes of different size, trophic level, and home range. The various receptors were assumed to have a diet composed of these varied prey classes (Table 4-2). As presented in Table 4-2 and on page 16, the rationale for the assumed diet/prey size class was based on that used in the Calcasieu Baseline Ecological Risk Assessment (BERA). The JDG should provide more discussion and supporting references for the prey size class assumptions for each receptor. See related e-mail comment/question number 7.

Response #3

Selection of dietary composition based on the different prey classes for the Calcasieu BERA relied on best professional judgment by the authors and USEPA based primarily on qualitative information on diet compositions of species within the various guilds identified.

Identification of size ranges for prey classes (e.g. Class 1, 2, 3, and 4 fish) were based on professional judgment and practical considerations (e.g. composite sampling requirements for field tissue sampling). Dietary composition relative to size classes are briefly reviewed below using information reviewed in the Calcasieu BERA and other supporting information identified by Anchor QEA. It is expected that this information will be used to verify and refine, if needed, the dietary composition of representative receptors in the BERA

Spotted Sandpiper

COPC Amendment dietary composition: 100 percent Group 1 Invertebrates (<7.5 cm; including polychaetes, aquatic insects, fiddler crabs, and juvenile blue crabs)

Summary of available literature:

'With exception of toad tadpoles, almost all animals small enough to be eaten, including carrion (flesh from dead fish). In a detailed study in n.-central Minnesota (LPI), the staple food items were terrestrial and aquatic invertebrates, mainly midges (Diptera) and mayflies (Ephemeroptera; Rubbelke 1976, Maxson and Oring 1980, Lank et al. 1985). Also known to eat house and stable flies (Diptera); grasshoppers, crickets, and mole crickets (Orthoptera), beetles (Coleoptera), caterpillars (Lepidoptera), worms (Annelida), mollusks and crustaceans, fish, and spiders (Araneae; Bent 1929, Nelson 1939, Cramp and Simmons 1983). In Wyoming, observed feeding on adult and larval brine flies (Paracoenia turbida) in meadows containing hot springs (Kuenzel and Wiegert 1973).' [Oring, Lewis W., Elizabeth M. Gray and J. Michael Reed. 1997. Spotted Sandpiper (*Actitis macularius*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/289>]

Based on the available literature, assuming that the spotted sandpiper diet is 100 percent aquatic invertebrates is conservative relative to the exposure of this receptor to the Site.

Great Blue Heron

COPC Amendment dietary composition: 100 percent Group 1 and Group 2 Fish (<15 cm)

Summary of available literature:

'Fish up to about 20 cm in length were dominant in the diet of herons foraging in southwestern Lake Erie (Hoffman, 1978), and 95 percent of fish consumed by great blues in a Wisconsin population were less than 25 cm in length (Kirkpatrick, 1940)' [USEPA 1993]

'Mostly fish but also amphibians, invertebrates, reptiles, mammals, and birds ([Palmer 1962](#), [Kushlan 1978](#), [Verbeek and Butler 1989](#)).' [Butler, Robert W. 1992. Great Blue Heron (*Ardea herodias*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online:
<http://bna.birds.cornell.edu/bna/species/025>]

'Herons primarily feed on fish, but they also consume small quantities of aquatic invertebrates, small mammals, and reptiles and amphibians (Ehrlich et al. 1988). Alexander (1977) found that up to 98% of stomach contents were fish. Two percent were identified as crustaceans and amphibians. Quinney (1982) reported that the entire stomach contents consisted of fish.' [MESL 2002]

Based on this information, the prey class size would be appropriate and conservative for this receptor.

Belted Kingfisher

COPC Amendment dietary composition: 100 percent Group 1 and Group 2 Fish (<15 cm)

Summary of available literature:

The belted kingfisher's diet primarily consists of fish and occasionally invertebrates (USEPA 1993).

'Belted kingfishers eat large fish relative to their body size (USEPA 1995). Several field studies have reported the size preferences of fish caught by belted kingfishers. The average length of fish caught in a field study in Michigan was less than 7.6 cm (range: 2.5 to 17.8 cm; Salyer and Lagler 1946). Another study found that belted kingfishers in Ohio selected fish ranging from 4 to 14 cm and 88% of the fish were between 6 and 12 cm (Davis 1982). The trophic level of the prey consumed by belted kingfishers varies slightly between regions. In a survey of field studies examining trophic level of belted kingfisher prey, USEPA (1995) found that 94% of prey were

from the aquatic environment with trophic levels ranging between 2.6 and 3.' [MESL 2002]

'Fish are generally < 10.2 cm in length ([Imhof 1962](#)); fish > 12.7 cm are thought to be difficult to swallow for this species ([Salyer and Lagler 1946](#)).' [Kelly, Jeffrey F., Eli S. Bridge and Michael J. Hamas. 2009. Belted Kingfisher (Megaceryle alcyon), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/084>]

Raccoon

COPC Amendment dietary composition: 100% percent Group 1 Fish (<7 cm)

Summary of available literature:

'Raccoons eat crayfish, snails, clams, small fishes, frogs, earthworms, bird and turtle eggs, and a wide variety of insects such as grasshoppers, crickets, and beetles. Acorns, berries, watermelons, cantaloupe, corn, tomatoes, and the tender shoots and buds of many trees and other plants are also consumed. (Lowery 1974; Choate et al. 1994).' [MESL 2002]

'The proportion of different foods in their diet depends on location and season, although plants are usually a more important component of the diet. They may focus on a preferred food, such as turtle eggs, when it is available (Stuewer, 1943a). They also will feed on garbage and carrion. Typically, it is only in the spring and early summer that raccoons eat more animal than plant material.' [USEPA 1993]

According to the summary table for raccoon in the WEFH (USEPA 1993), the proportion of aquatic species (crayfish and fish) does not exceed 50 percent of the diet.

Based on the available literature, the assumption of 100 percent Group 1 Fish diet is considered conservative with regards to potential exposure to Site COPCs. Generally, it would not be expected for aquatic species to exceed 50 percent of the diet.

Mink

COPC Amendment dietary composition: 50 percent Group 1 Fish (<7 cm) and 50 percent Group 4 Fish (30-90 cm)

Summary of available literature:

'They will feed on a variety of prey, depending on the season and prey abundance... Mink are almost strictly carnivorous with only a limited amount of plant material reported in their diet (Proulx et al. 1987)... Mink tend to feed on slow-moving bottom fish rather than on the faster mid-stream salmonids (Eagle and Whitman 1987). Fish species captured by mink in rivers and streams in lower Michigan and in New York were under 15-18 cm in length.'

[MESL 2002]

Based on the available literature, the selection of 100 percent fish diet is considered conservative for assessing exposure to Site COPCs. The inclusion of larger fish (Group 4) was intended to represent the potential of this species to take larger prey (i.e., mammals, ducks, etc.), which may occasionally include large fish, if available. As larger fish tend to have higher levels of bioaccumulative COPCs, all things being equal, this was assumed to be a conservative assumption.

River Otter

COPC Amendment dietary composition: 50 percent Group 1 Fish (<7 cm) and 50 percent Group 4 Fish (30-90 cm)

Summary of available literature:

'The bulk of the river otter's diet is fish; however, otters are opportunistic and will feed on a variety of prey depending on availability and ease of capture. River otters take different fish species according to their availability and how well the fish can escape capture (Loranger, 1981). Depending on availability, otters also may consume crustaceans (especially crayfish), aquatic insects (e.g., stonefly nymphs, aquatic beetles), amphibians, insects, birds (e.g., ducks), mammals (e.g., young beavers), and turtles (Burt and Grossenheider, 1980; Lagler and Ostenson, 1942; Liers, 1951b; Melquist and Hornocker, 1983; Palmer and Fowler, 1975; Toweill and Tabor, 1982).' [USEPA 1993]

'River otters can capture adult trout, salmon, perch and pike. However, because these prey are fast swimmers and difficult for otter to capture, they comprise a small part of their diet on a yearly basis (Lauhacinda 1978)... Because river otters are fairly large mammals and are opportunistic in their feeding habits, fish size can vary greatly from 2 to 50 cm (Melquist and Hornocker 1983). However, most fish captured are small and less than 15 cm in length (Hamilton 1961; Lagler and Ostenson 1942; Alexander 1977). Greer (1956) and Chanin

(1981) determined that fish prey size captured by otter ranged from less than 15 cm (60%), to between 15-25 cm (30%) and greater than 25 cm (5%).'[MESL 2002]

Similar to mink, the diet composition is considered conservative with regards to exposure to Site COPC in sediment and biota. Larger fish species are occasionally taken by this species.

Brown Pelican

COPC Amendment dietary composition: 90 percent Group 1, 2, and 3 Fish (<30 cm) and 10 percent Group 1 Invertebrates

Summary of available literature:

*'Small, surface-schooling fishes make up bulk of diet throughout range. Along Atlantic and Gulf coasts of U.S., menhaden (*Brevoortia spp.*) usually predominate; mullet (*Mugil spp.*) also important ([Palmer 1962](#), [Blus et al. 1979b](#), [Fogarty et al. 1981](#))... Thirty-two stomachs of pelicans from U.S. Gulf coast contained 95.8% menhaden, 3.1% silversides (*Menidia spp.*), 0.8% dolphin (*Coryphaena spp.*), and 0.3% prawns (method for quantifying amounts not specified; [Palmer 1962](#)). Stomachs of 3 birds collected in Puerto Rico contained average of 109 fish; 62% dwarf herring (mean weight 1.8 g, mean total length 6.0 cm) and 38% sardines (*Harengula jaguana*; mean weight 2.5 g, mean total length 6.8 cm; [Collazo 1985](#)). '[Shields, Mark. 2002. Brown Pelican (*Pelecanus occidentalis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/609>]*

'Pelicans usually capture prey items less than 25 cm (10 inches) long, and most captures occur in the top 1 m (3.3 ft) of water (Krantz 1968; Schreiber 1979; Schnell et al. 1983). '
[USFWS 1985]

Based on the available literature, the diet composition for this receptor reflects potential prey in diet. This species may take more fish within the Group 2 size class but not decidedly so. Ten percent Group 1 invertebrates may be an overestimation, but this assumption is not considered under-protective. Diet composition may be refined during the BERA to reflect the importance of menhaden and mullet in this receptor's diet.

Comment #4

4.3.2 Sediment and Tissue Exposure Concentrations – BSAF values were derived from the Calcasieu Estuary BERA and the U.S. Corps of Engineers BSAF database. The majority of the sediment and tissue information came from the Calcasieu BERA. This information was provided in Table 37B (on CD) of the revised document. The JDG should ensure that the BSAF values extracted from the U.S. Corps of Engineers BSAF database (and used in combination with the Calcasieu data) are provided in the future ecological risk assessment submittals. See related e-mail comment/question number 8.

Response #4

USACE BSAF database values are included as Attachment B for review.

Comment #5

4.6.3 – Mammals – For the mink Total Daily Intake (TDI) calculations, body weight was mistakenly entered as the free metabolic rate (FMR). This was a conservative error. Anchor representatives provided a spread sheet showing revised TDIs and hazard quotients for the mink. Since this was a conservative error, a number of previously “uncertain COPCs” were dropped from the COPC list, and several COPCs are now “uncertain COPCs.” The JDG should provide the revised mink calculations for the record and should also make any changes to the final overall COPC list as appropriate. See related e-mail comment/question number 12.

Response #5

Please find revised risk spreadsheets and COPC summary tables (Attachment C) based on revised FMR values and errors in the incidental sediment ingestion rate calculations described in Response #1. This will include the following revised tables from the *Amendment to the Selection of Contaminants of Potential Concern for Ecological Risk Assessment Technical Memorandum, Patrick Bayou Superfund Site, Deer Park, Texas* (Anchor 2008):

- Table C-7. Total daily intake and hazard quotient worksheet for double-crested cormorant
 - Table C-8. Total daily intake and hazard quotient worksheet for belted kingfisher
 - Table C-9. Total daily intake and hazard quotient worksheet for spotted sandpiper
-

- Table C-10. Total daily intake and hazard quotient worksheet for great blue heron
- Table C-11. Total daily intake and hazard quotient worksheet for raccoon
- Table C-12. Total daily intake and hazard quotient worksheet for river otter
- Table C-13. Total daily intake and hazard quotient worksheet for mink
- Table 4-2. Deterministic Total Daily Intake Model Parameters for Aquatic Dependent Wildlife
- Table 4-9. COPC status for aquatic dependent wildlife and fish receptors
- Table 5-1. Ecological risk assessment target analyte list by exposure media

The above revised tables are provided as Attachment C. Based on these revisions, the following changes were made to the COPCs for wildlife receptors:

Table 1
Changes to Wildlife Receptor Group COPCs Based on TCEQ Comments

Receptor	Chemical	Previous COPC Status	Revised COPC Status
Spotted sandpiper	Naphthalene	Yes	Uncertain
	Phenanthrene	Yes	Uncertain
	Hexachlorobutadiene	Yes	Uncertain
Raccoon	Dioxin/furan TEQ	Yes	Uncertain
Mink	Copper	Uncertain	No
	Selenium	Yes	Uncertain
	Zinc	Uncertain	Yes
	Benzo(a)anthracene	Uncertain	No
	Benzo(a)pyrene	Uncertain	No
	Benzo(b)fluoranthene	Uncertain	No
	Benzo(g,h,i)perylene	Uncertain	No
	Benzo(k)fluoranthene	Uncertain	No
	Chrysene	Uncertain	No
	Dibenzo(a,h)anthracene	Uncertain	No
	Fluoranthene	Uncertain	No
	Aroclor 1254	Yes	Uncertain
	PCB congeners TEQ	Yes	Uncertain
	4,4'-DDE	Uncertain	No
	Aldrin	Uncertain	No
	Heptachlor Epoxide	Uncertain	No
	Endosulfan II	Uncertain	No
	Hexachlorobutadiene	Uncertain	No
	1,3-Dichlorobenzene	Uncertain	No

SUMMARY

This memo is the final response to comments from TCEQ in the December 10, 2008, interoffice correspondence. These responses and attached tables should resolve all outstanding issues regarding the development of COPCs for use in the Site BERA. The following Tables 2 and 3 represent the final list of COPCs for the BERA for aquatic receptors and wildlife receptors, respectively.

Table 2
Final List of Aquatic Receptor COPCs

Chemical Class	Chemical	Benthic Invertebrates	Fish	Aquatic Plants
Conventional	Ammonia	Uncertain	Uncertain	No
Dioxin/Furans	2,3,7,8-TCDD TEQ	No	Yes *	No
Metals	Arsenic	Yes	Yes *	No
	Barium	Yes	Yes	No
	Cadmium	Yes	Yes *	No
	Chromium	Yes	Yes *	No
	Copper	Yes	Yes *	Yes
	Lead	Yes	Yes *	No
	Mercury	Yes	Yes *	Yes
	Nickel	Yes	Yes	Yes
	Selenium	No	Yes *	No
	Silver	Yes	Yes	No
	Zinc	Yes	Yes *	No
PAHS	2-Methylnaphthalene	Yes	Yes	No
	Acenaphthene	Yes	Yes	Yes
	Acenaphthylene	Yes	Yes	No
	Anthracene	Yes	Yes	No
	Benzo(a)anthracene	Yes	Yes	No
	Benzo(a)pyrene	Yes	Yes	No
	Benzo(e)pyrene	Uncertain	Uncertain	No
	Chrysene	Yes	Yes	No
	Dibenzo(a,h)anthracene	Yes	Yes	No
	Fluoranthene	Yes	Yes	No
	Fluorene	Yes	Yes	No
	Indeno(1,2,3-cd)pyrene	Uncertain	Uncertain	No
	Naphthalene	Yes	Yes	No
	Perylene	Uncertain	Uncertain	No
	Phenanthrene	Yes	Yes	No
	Pyrene	Yes	Yes	No
PCBs	Total HPAH 16 standard	Yes	Yes	No
	Total LPAH 16 standard	Yes	Yes *	No
	Total PAH 16 standard	Yes	Yes *	No
	Aroclor 1248	Yes	Yes	No
	Aroclor 1254	Yes	Yes	No
Pesticides	Aroclor 1260	Yes	Yes	No
	Total PCB (U=1/2)	Yes	Yes *	No
	PCB Congeners	Yes	Yes	Yes
	alpha-Chlordane	Yes	Yes	No
	gamma-BHC (Lindane)	Yes	Yes	No
	gamma-Chlordane	Yes	Yes	No
	Sum DDD	Yes	Yes *	No
	Sum DDE	Yes	Yes *	No
	Sum DDT	Yes	Yes	Yes

Table 2
Final List of Aquatic Receptor COPCs

Chemical Class	Chemical	Benthic Invertebrates	Fish	Aquatic Plants
Pesticides	Total Chlordane (a & g)	Yes	Yes *	No
	Total DDT	Yes	Yes	Yes
	Aldrin	Uncertain	Uncertain *	No
	Endosulfan I	Uncertain	Uncertain	No
	Endosulfan II	Uncertain	Uncertain *	No
	Endrin	Uncertain	Uncertain	No
	Methoxychlor	Uncertain	Uncertain	No
SVOCs	bis(2-Ethylhexyl)phthalate	Yes	Yes	No
	Hexachlorobutadiene	Yes	Yes	No
	Hexachloroethane	Yes	Yes	No
	Benzidine	Yes	Yes	No
	bis(2-Chloroisopropyl)ether	Yes	Yes	No
	Di-n-octylphthalate	Yes	Yes	No
	Hexachlorobenzene	Yes	Yes	No
VOCs	1,3-Dichlorobenzene	Yes	Yes *	No
	1,4-Dichlorobenzene	Yes	Yes	No
	Benzene	Yes	Yes	No
	Chlorobenzene	Yes	Yes	No
	Ethylbenzene	Yes	Yes	No
	Toluene	Yes	Yes	No
	Total xylene	Yes	Yes	No
	4-Isopropyltoluene	Uncertain	Uncertain	No
	Isopropylbenzene	Yes	Yes	Yes
	n-Butylbenzene	Yes	Yes	No
	n-Propylbenzene	Yes	Yes	No
	sec-Butylbenzene	Yes	Yes	No
	tert-Butylbenzene	Yes	Yes	No

* Bioaccumulative COPC for fish

Table 3
Final List of Wildlife Receptor COPCs

Chemical	Brown Pelican	Piscivorous Birds	Sediment Probing Birds	Carnivorous Birds	Omnivorous Mammals	Piscivorous Mammals
Arsenic	Yes	Uncertain	Yes	Uncertain	Yes	Yes
Cadmium	No	No	Uncertain	No	No	No
Chromium	Yes	Uncertain	Yes	Uncertain	No	No
Copper	No	No	Yes	No	No	No
Lead	Yes	Uncertain	Uncertain	Uncertain	No	No
Mercury	Yes	Yes	Yes	Yes	Yes	Yes
Selenium	No	No	Uncertain	No	Uncertain	Yes
Zinc	Yes	Uncertain	Uncertain	Uncertain	No	No
2-Methylnaphthalene	Yes	Uncertain	Uncertain	Uncertain	No	No
Acenaphthene	Yes	Uncertain	Uncertain	Uncertain	No	No
Acenaphthylene	Yes	Uncertain	Uncertain	Uncertain	No	No
Anthracene	Yes	Uncertain	Uncertain	Uncertain	No	No
Fluoranthene	No	No	No	No	Uncertain	No
Fluorene	Yes	Uncertain	Uncertain	No	No	No
Naphthalene	Yes	Uncertain	Uncertain	Uncertain	No	No
Phenanthrene	Yes	Uncertain	Uncertain	Uncertain	No	No
Total HPAH 16	No	No	Uncertain	No	Uncertain	Uncertain
Total LPAH 16	Yes	Yes	Yes	Yes	Uncertain	Uncertain
Total PAH 16	No	No	Uncertain	No	--	--
Aroclor 1248	Yes	Yes	Yes	Yes	Yes	Yes
Aroclor 1254	Yes	Uncertain	Yes	Uncertain	Uncertain	Uncertain
Aroclor 1260	No	No	No	No	No	Uncertain
PCB congeners TEQ	Yes	Yes	Yes	Yes	Uncertain	Uncertain
Dioxin/furan congener TEQ	Yes	Uncertain	Yes	Uncertain	Uncertain	Yes
4,4'-DDD	Yes	Uncertain	Yes	Uncertain	No	No
4,4'-DDE	Yes	Yes	Yes	Yes	No	No
4,4'-DDT	Yes	Yes	Yes	Yes	No	Uncertain
Aldrin	No	Uncertain	Uncertain	No	No	No
Endrin	No	Uncertain	Uncertain	No	No	No
Heptachlor Epoxide	No	No	Uncertain	No	No	No

Table 3
Final List of Wildlife Receptor COPCs

Chemical	Brown Pelican	Piscivorous Birds	Sediment Probing Birds	Carnivorous Birds	Omnivorous Mammals	Piscivorous Mammals
Total DDT	Yes	Yes	Yes	Yes	No	Uncertain
Hexachlorobenzene	Yes	Yes	Yes	Uncertain	Uncertain	Uncertain
Hexachlorobutadiene	Yes	Uncertain	Uncertain	No	No	No
Hexachloroethane	No	Uncertain	Uncertain	No	No	No
1,3-Dichlorobenzene	Yes	Yes	Yes	Yes	No	No
1,4-Dichlorobenzene	Yes	Uncertain	Uncertain	Uncertain	No	No

ATTACHMENT A – LETTER FROM VICKI REAT

Texas Commission on Environmental Quality

INTEROFFICE MEMORANDUM

To: Joe Bell, Environmental Cleanup Section **Date:** December 10, 2008
II, Remediation Division

From: Vickie Reat, Technical Support Section, Remediation Division

Subject: Amendment to the Selection of Contaminants of Potential Concern (COPCs) for Ecological Risk, Technical Memorandum
Patrick Bayou Superfund Site - Deer Park, Texas
Prepared for the Patrick Bayou Joint Defense Group (JDG) by Anchor Environmental, L.L.C.
October 2008

I have completed my review of the subject document. The purpose of this amendment document is to address comments received from the U.S. EPA, the TCEQ, and the trustees regarding the document titled, "Draft Selection of COPCs for Ecological Risk Assessment" (April 2008). The COPC screening process that was used in the draft document was revised as a result of agency comments, incorporation of additional data received from U.S. EPA and TCEQ, and subsequent discussions and agreements between the JDG, U.S. EPA, TCEQ, and trustees. This amendment presents the revised screening process and the "final" selection of ecological COPCs for Patrick Bayou.

In an effort to minimize the need for comment exchange and resolution, after my initial review of this document I provided a list of comments and questions to Jason Kase of Anchor Environmental in an e-mail dated November 26, 2008. Mr. Kase provided responses to these comments in two e-mails dated December 4 and 8, 2008. For the record, I have attached copies of these two e-mails. Most of my comments/questions were resolved with this exchange of e-mails, coupled with a conference call on December 8, 2008 with Anchor representatives. Where my comments/questions were not completely resolved, they are detailed below. The Anchor Environmental representatives agreed to respond to these outstanding items in a future Technical Memorandum.

1. 4.3 Exposure Assessment – For this amendment, both dietary and incidental sediment ingestion were included in estimates of exposure for wildlife receptors (for bioaccumulative chemicals). According to the discussion, exposure was characterized using a daily intake model to calculate daily intake of COPCs using equation 4-1 (page 14) as adapted from the U.S. EPA's *Wildlife Exposure Factors Handbook*. The JDG should provide more discussion as to how this equation was adapted from the equations and related discussions in the *Wildlife Exposure Factors Handbook*. See related e-mail comment/question number 5.
2. 4.3.1.2 Gross Energies and Assimilation Efficiencies – Looking at the basis for the assimilation efficiencies (Table 4-3) for the various receptors, generally a 5th

Re: Review of “Amendment to the Selection of Contaminants of Potential Concern (COPCs) for Ecological Risk,” Patrick Bayou Superfund Site

percentile value was used based on mean and standard deviation values from the U.S. EPA’s *Wildlife Exposure Factors Handbook*. The assimilation efficiency for carnivorous birds (average and standard deviation) was assumed to be that for waterfowl consuming aquatic invertebrates (77% average, 8.4% standard deviation) using the Karasov (1990) reference indicated in the *Wildlife Exposure Factors Handbook* (page 4-15). The JDG should provide more discussion as to why the use of these values is an appropriately conservative surrogate for the assimilation efficiency associated with birds of prey consuming fish. See related e-mail comment/question number 3.

3. 4.3.1.4 Proportion of Prey Items in Diet – Prey items (Table 4-4) were organized into various prey classes of different size, trophic level, and home range. The various receptors were assumed to have a diet composed of these varied prey classes (Table 4-2). As presented in Table 4-2 and on page 16, the rationale for the assumed diet/prey size class was based on that used in the Calcasieu Baseline Ecological Risk Assessment (BERA). The JDG should provide more discussion and supporting references for the prey size class assumptions for each receptor. See related e-mail comment/question number 7.
4. 4.3.2 Sediment and Tissue Exposure Concentrations – BSAF values were derived from the Calcasieu Estuary BERA and the U.S. Corps of Engineers BSAF database. The majority of the sediment and tissue information came from the Calcasieu BERA. This information was provided in Table 37B (on CD) of the revised document. The JDG should ensure that the BSAF values extracted from the U.S. Corps of Engineers BSAF database (and used in combination with the Calcasieu data) are provided in the future ecological risk assessment submittals. See related e-mail comment/question number 8.
5. 4.6.3 – Mammals – For the mink Total Daily Intake (TDI) calculations, body weight was mistakenly entered as the free metabolic rate (FMR). This was a conservative error. Anchor Environmental representatives provided a spread sheet showing revised TDIs and hazard quotients for the mink. Since this was a conservative error, a number of previously “uncertain COPCs” were dropped from the COPC list, and several COPCs are now “uncertain COPCs.” The JDG should provide the revised mink calculations for the record and should also make any changes to the final overall COPC list as appropriate. See related e-mail comment/question number 12.

Attachments: E-mails from Jason Kase of Anchor Environmental to Vickie Reat dated December 4 and December 8, 2008.

ATTACHMENT B - USACE BSAF DATABASE

ATTACHMENT B

USACE ERDC BSAF database records used in selection of BSAF for wildlife exposure assessment

Chemical Class	CASRN	Chemical	Organism	Age	Group	Type	Gulf Coast ^a	Prey Group ^b	Tissue Type	BSAF ^c	Source
Dioxins	35822-46-9	1,2,3,4,6,7,8-HxCDD	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.098	ERDC USACE
Dioxins	35822-46-9	1,2,3,4,6,7,8-HxCDD	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.164	ERDC USACE
Dioxins	35822-46-9	1,2,3,4,6,7,8-HxCDD	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.053	ERDC USACE
Dioxins	35822-46-9	1,2,3,4,6,7,8-HxCDD	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.07	ERDC USACE
Dioxins	35822-46-9	1,2,3,4,6,7,8-HxCDD	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.058	ERDC USACE
Dioxins	35822-46-9	1,2,3,4,6,7,8-HxCDD	Arabellidae	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.8236	ERDC USACE
Dioxins	39227-28-6	1,2,3,4,7,8-HxCDD	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.784	ERDC USACE
Dioxins	39227-28-6	1,2,3,4,7,8-HxCDD	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.502	ERDC USACE
Dioxins	39227-28-6	1,2,3,4,7,8-HxCDD	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.529	ERDC USACE
Dioxins	39227-28-6	1,2,3,4,7,8-HxCDD	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.415	ERDC USACE
Dioxins	39227-28-6	1,2,3,4,7,8-HxCDD	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.308	ERDC USACE
Dioxins	57653-85-7	1,2,3,6,7,8-HxCDD	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.404	ERDC USACE
Dioxins	57653-85-7	1,2,3,6,7,8-HxCDD	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.227	ERDC USACE
Dioxins	57653-85-7	1,2,3,6,7,8-HxCDD	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.239	ERDC USACE
Dioxins	57653-85-7	1,2,3,6,7,8-HxCDD	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.209	ERDC USACE
Dioxins	57653-85-7	1,2,3,6,7,8-HxCDD	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.209	ERDC USACE
Dioxins	19408-74-3	1,2,3,7,8,9-HxCDD	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.395	ERDC USACE
Dioxins	19408-74-3	1,2,3,7,8,9-HxCDD	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.269	ERDC USACE
Dioxins	19408-74-3	1,2,3,7,8,9-HxCDD	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.269	ERDC USACE
Dioxins	19408-74-3	1,2,3,7,8,9-HxCDD	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.223	ERDC USACE
Dioxins	19408-74-3	1,2,3,7,8,9-HxCDD	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.161	ERDC USACE
Dioxins	40321-76-4	1,2,3,7,8-PeCDD	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.888	ERDC USACE
Dioxins	40321-76-4	1,2,3,7,8-PeCDD	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.502	ERDC USACE
Dioxins	40321-76-4	1,2,3,7,8-PeCDD	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.483	ERDC USACE
Dioxins	40321-76-4	1,2,3,7,8-PeCDD	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.315	ERDC USACE
Dioxins	40321-76-4	1,2,3,7,8-PeCDD	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.198	ERDC USACE
Dioxins	1746-01-6	2,3,7,8-TCDD	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	1.212	ERDC USACE
Dioxins	1746-01-6	2,3,7,8-TCDD	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.349	ERDC USACE
Dioxins	1746-01-6	2,3,7,8-TCDD	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.514	ERDC USACE
Dioxins	1746-01-6	2,3,7,8-TCDD	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.344	ERDC USACE
Dioxins	1746-01-6	2,3,7,8-TCDD	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.304	ERDC USACE
Dioxins	3268-87-9	OCDD	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.09	ERDC USACE
Dioxins	3268-87-9	OCDD	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.105	ERDC USACE
Dioxins	3268-87-9	OCDD	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.036	ERDC USACE
Dioxins	3268-87-9	OCDD	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.055	ERDC USACE
Dioxins	3268-87-9	OCDD	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.04	ERDC USACE
Furans	67562-39-4	1,2,3,4,6,7,8-HpCDF	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.885	ERDC USACE
Furans	67562-39-4	1,2,3,4,6,7,8-HpCDF	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.439	ERDC USACE
Furans	67562-39-4	1,2,3,4,6,7,8-HpCDF	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.164	ERDC USACE
Furans	67562-39-4	1,2,3,4,6,7,8-HpCDF	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.233	ERDC USACE
Furans	67562-39-4	1,2,3,4,6,7,8-HpCDF	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.202	ERDC USACE
Furans	55673-89-7	1,2,3,4,7,8,9-HpCDF	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.944	ERDC USACE
Furans	55673-89-7	1,2,3,4,7,8,9-HpCDF	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.783	ERDC USACE
Furans	55673-89-7	1,2,3,4,7,8,9-HpCDF	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.614	ERDC USACE
Furans	55673-89-7	1,2,3,4,7,8,9-HpCDF	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.432	ERDC USACE
Furans	55673-89-7	1,2,3,4,7,8,9-HpCDF	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.839	ERDC USACE
Furans	70648-26-9	1,2,3,4,7,8-HxCDF	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.281	ERDC USACE

ATTACHMENT B
USACE ERDC BSAF database records used in selection of BSAF for wildlife exposure assessment

Chemical Class	CASRN	Chemical	Organism	Age	Group	Type	Gulf Coast ^a	Prey Group ^b	Tissue Type	BSAF ^c	Source
Furans	70648-26-9	1,2,3,4,7,8-HxCDF	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.318	ERDC USACE
Furans	70648-26-9	1,2,3,4,7,8-HxCDF	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.306	ERDC USACE
Furans	70648-26-9	1,2,3,4,7,8-HxCDF	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.178	ERDC USACE
Furans	70648-26-9	1,2,3,4,7,8-HxCDF	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.105	ERDC USACE
Furans	57117-44-9	1,2,3,6,7,8-HxCDF	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.614	ERDC USACE
Furans	57117-44-9	1,2,3,6,7,8-HxCDF	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.651	ERDC USACE
Furans	57117-44-9	1,2,3,6,7,8-HxCDF	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.68	ERDC USACE
Furans	57117-44-9	1,2,3,6,7,8-HxCDF	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.365	ERDC USACE
Furans	57117-44-9	1,2,3,6,7,8-HxCDF	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.184	ERDC USACE
Furans	72918-21-9	1,2,3,7,8,9-HxCDF	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.527	ERDC USACE
Furans	72918-21-9	1,2,3,7,8,9-HxCDF	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.407	ERDC USACE
Furans	72918-21-9	1,2,3,7,8,9-HxCDF	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.398	ERDC USACE
Furans	72918-21-9	1,2,3,7,8,9-HxCDF	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.225	ERDC USACE
Furans	72918-21-9	1,2,3,7,8,9-HxCDF	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.195	ERDC USACE
Furans	57117-41-6	1,2,3,7,8-PeCDF	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.722	ERDC USACE
Furans	57117-41-6	1,2,3,7,8-PeCDF	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.473	ERDC USACE
Furans	57117-41-6	1,2,3,7,8-PeCDF	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	1.024	ERDC USACE
Furans	57117-41-6	1,2,3,7,8-PeCDF	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.361	ERDC USACE
Furans	57117-41-6	1,2,3,7,8-PeCDF	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.312	ERDC USACE
Furans	60851-34-5	2,3,4,6,7,8-HxCDF	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	1.462	ERDC USACE
Furans	60851-34-5	2,3,4,6,7,8-HxCDF	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	1.034	ERDC USACE
Furans	60851-34-5	2,3,4,6,7,8-HxCDF	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	1.169	ERDC USACE
Furans	60851-34-5	2,3,4,6,7,8-HxCDF	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.487	ERDC USACE
Furans	60851-34-5	2,3,4,6,7,8-HxCDF	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.3	ERDC USACE
Furans	57117-31-4	2,3,4,7,8-PeCDF	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.945	ERDC USACE
Furans	57117-31-4	2,3,4,7,8-PeCDF	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.535	ERDC USACE
Furans	57117-31-4	2,3,4,7,8-PeCDF	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.645	ERDC USACE
Furans	57117-31-4	2,3,4,7,8-PeCDF	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.294	ERDC USACE
Furans	57117-31-4	2,3,4,7,8-PeCDF	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.286	ERDC USACE
Furans	51207-31-9	2,3,7,8-TCDF	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	1.061	ERDC USACE
Furans	51207-31-9	2,3,7,8-TCDF	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.419	ERDC USACE
Furans	51207-31-9	2,3,7,8-TCDF	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.668	ERDC USACE
Furans	51207-31-9	2,3,7,8-TCDF	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.389	ERDC USACE
Furans	51207-31-9	2,3,7,8-TCDF	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.48	ERDC USACE
Furans	39001-02-0	OCDF	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.11	ERDC USACE
Furans	39001-02-0	OCDF	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.178	ERDC USACE
Furans	39001-02-0	OCDF	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.048	ERDC USACE
Furans	39001-02-0	OCDF	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.059	ERDC USACE
Furans	39001-02-0	OCDF	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.042	ERDC USACE
Other Organics	118-74-1	Hexachlorobenzene	Chasmagnathus granulata	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	5	ERDC USACE
Other Organics	118-74-1	Hexachlorobenzene	Chasmagnathus granulata	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	4	ERDC USACE
PAHs	83-32-9	Acenaphthene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0104	ERDC USACE
PAHs	83-32-9	Acenaphthene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.023	ERDC USACE
PAHs	208-96-8	Acenaphthylene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0233	ERDC USACE
PAHs	208-96-8	Acenaphthylene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.009	ERDC USACE
PAHs	208-96-8	Acenaphthylene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.001	ERDC USACE
PAHs	120-12-7	Anthracene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0085	ERDC USACE

ATTACHMENT B

USACE ERDC BSAF database records used in selection of BSAF for wildlife exposure assessment

Chemical Class	CASRN	Chemical	Organism	Age	Group	Type	Gulf Coast ^a	Prey Group ^b	Tissue Type	BSAF ^c	Source
PAHs	120-12-7	Anthracene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.029	ERDC USACE
PAHs	120-12-7	Anthracene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.001	ERDC USACE
PAHs	120-12-7	Anthracene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.001	ERDC USACE
PAHs	56-55-3	Benzo(a)anthracene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0425	ERDC USACE
PAHs	56-55-3	Benzo(a)anthracene	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.023	ERDC USACE
PAHs	56-55-3	Benzo(a)anthracene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.262	ERDC USACE
PAHs	56-55-3	Benzo(a)anthracene	Lumbrineridae misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.03	ERDC USACE
PAHs	56-55-3	Benzo(a)anthracene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.009	ERDC USACE
PAHs	56-55-3	Benzo(a)anthracene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.015	ERDC USACE
PAHs	50-32-8	Benzo(a)pyrene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0343	ERDC USACE
PAHs	50-32-8	Benzo(a)pyrene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.062	ERDC USACE
PAHs	50-32-8	Benzo(a)pyrene	Lumbrineridae misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.011	ERDC USACE
PAHs	50-32-8	Benzo(a)pyrene	Nephtys spp.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.001	ERDC USACE
PAHs	50-32-8	Benzo(a)pyrene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.003	ERDC USACE
PAHs	50-32-8	Benzo(a)pyrene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.004	ERDC USACE
PAHs	50-32-8	Benzo(a)pyrene	Nereis diversicolor	Unknown	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	0.58	ERDC USACE
PAHs	50-32-8	Benzo(a)pyrene	Nereis diversicolor	Unknown	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	0.8	ERDC USACE
PAHs	50-32-8	Benzo(a)pyrene	Marenzelleria viridis	Unknown	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	0.37	ERDC USACE
PAHs	50-32-8	Benzo(a)pyrene	Marenzelleria viridis	Unknown	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	0.49	ERDC USACE
PAHs	50-32-8	Benzo(a)pyrene	Leitoscoloplos fragilis	Unknown	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	1.56	ERDC USACE
PAHs	50-32-8	Benzo(a)pyrene	Leitoscoloplos fragilis	Unknown	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	1.49	ERDC USACE
PAHs	205-99-2	Benzo(b)fluoranthene	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.006	ERDC USACE
PAHs	205-99-2	Benzo(b)fluoranthene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.147	ERDC USACE
PAHs	205-99-2	Benzo(b)fluoranthene	Lumbrineridae misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.02	ERDC USACE
PAHs	205-99-2	Benzo(b)fluoranthene	Nephtys spp.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.003	ERDC USACE
PAHs	205-99-2	Benzo(b)fluoranthene	Cerebratulus lacteus	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.004	ERDC USACE
PAHs	205-99-2	Benzo(b)fluoranthene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.005	ERDC USACE
PAHs	205-99-2	Benzo(b)fluoranthene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.006	ERDC USACE
PAHs	191-24-2	Benzo(g,h,i)perylene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0324	ERDC USACE
PAHs	191-24-2	Benzo(g,h,i)perylene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.058	ERDC USACE
PAHs	191-24-2	Benzo(g,h,i)perylene	Lumbrineridae misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.008	ERDC USACE
PAHs	191-24-2	Benzo(g,h,i)perylene	Nephtys spp.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.001	ERDC USACE
PAHs	191-24-2	Benzo(g,h,i)perylene	Cerebratulus lacteus	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.001	ERDC USACE
PAHs	191-24-2	Benzo(g,h,i)perylene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.003	ERDC USACE
PAHs	191-24-2	Benzo(g,h,i)perylene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.003	ERDC USACE
PAHs	207-08-9	Benzo(k)fluoranthene	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.003	ERDC USACE
PAHs	207-08-9	Benzo(k)fluoranthene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.085	ERDC USACE
PAHs	207-08-9	Benzo(k)fluoranthene	Lumbrineridae misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.012	ERDC USACE
PAHs	207-08-9	Benzo(k)fluoranthene	Nephtys spp.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.001	ERDC USACE
PAHs	207-08-9	Benzo(k)fluoranthene	Cerebratulus lacteus	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.001	ERDC USACE
PAHs	207-08-9	Benzo(k)fluoranthene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.003	ERDC USACE
PAHs	207-08-9	Benzo(k)fluoranthene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.004	ERDC USACE
PAHs	218-01-9	Chrysene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0614	ERDC USACE
PAHs	218-01-9	Chrysene	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.029	ERDC USACE
PAHs	218-01-9	Chrysene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.299	ERDC USACE
PAHs	218-01-9	Chrysene	Lumbrineridae misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.038	ERDC USACE
PAHs	218-01-9	Chrysene	Nephtys spp.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.007	ERDC USACE

ATTACHMENT B

USACE ERDC BSAF database records used in selection of BSAF for wildlife exposure assessment

Chemical Class	CASRN	Chemical	Organism	Age	Group	Type	Gulf Coast ^a	Prey Group ^b	Tissue Type	BSAF ^c	Source
PAHs	218-01-9	Chrysene	Cerebratulus lacteus	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.004	ERDC USACE
PAHs	218-01-9	Chrysene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.011	ERDC USACE
PAHs	218-01-9	Chrysene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.02	ERDC USACE
PAHs	53-70-3	Dibenzo(a,h)anthracene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0108	ERDC USACE
PAHs	53-70-3	Dibenzo(a,h)anthracene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.025	ERDC USACE
PAHs	53-70-3	Dibenzo(a,h)anthracene	Lumbrineridae misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.003	ERDC USACE
PAHs	53-70-3	Dibenzo(a,h)anthracene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.001	ERDC USACE
PAHs	53-70-3	Dibenzo(a,h)anthracene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.001	ERDC USACE
PAHs	206-44-0	Fluoranthene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0415	ERDC USACE
PAHs	206-44-0	Fluoranthene	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.039	ERDC USACE
PAHs	206-44-0	Fluoranthene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.531	ERDC USACE
PAHs	206-44-0	Fluoranthene	Lumbrineridae misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.026	ERDC USACE
PAHs	206-44-0	Fluoranthene	Nephtys spp.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.007	ERDC USACE
PAHs	206-44-0	Fluoranthene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.007	ERDC USACE
PAHs	206-44-0	Fluoranthene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.019	ERDC USACE
PAHs	206-44-0	Fluoranthene	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	3.77	ERDC USACE
PAHs	206-44-0	Fluoranthene	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	2.47	ERDC USACE
PAHs	206-44-0	Fluoranthene	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	0.55	ERDC USACE
PAHs	206-44-0	Fluoranthene	Neanthes virens	Adult	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	0.8	ERDC USACE
PAHs	206-44-0	Fluoranthene	Neanthes virens	Adult	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	1.05	ERDC USACE
PAHs	206-44-0	Fluoranthene	Neanthes virens	Adult	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	3.31	ERDC USACE
PAHs	86-73-7	Fluorene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0027	ERDC USACE
PAHs	86-73-7	Fluorene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.085	ERDC USACE
PAHs	193-39-5	Indeno(1,2,3-cd)pyrene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0225	ERDC USACE
PAHs	193-39-5	Indeno(1,2,3-cd)pyrene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.053	ERDC USACE
PAHs	193-39-5	Indeno(1,2,3-cd)pyrene	Lumbrineridae misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.007	ERDC USACE
PAHs	193-39-5	Indeno(1,2,3-cd)pyrene	Nephtys spp.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.001	ERDC USACE
PAHs	193-39-5	Indeno(1,2,3-cd)pyrene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.002	ERDC USACE
PAHs	193-39-5	Indeno(1,2,3-cd)pyrene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.002	ERDC USACE
PAHs	91-20-3	Naphthalene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.1031	ERDC USACE
PAHs	91-20-3	Naphthalene	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.028	ERDC USACE
PAHs	91-20-3	Naphthalene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.031	ERDC USACE
PAHs	91-20-3	Naphthalene	Lumbrineridae misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.025	ERDC USACE
PAHs	91-20-3	Naphthalene	Nephtys spp.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.01	ERDC USACE
PAHs	91-20-3	Naphthalene	Cerebratulus lacteus	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.009	ERDC USACE
PAHs	91-20-3	Naphthalene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.008	ERDC USACE
PAHs	91-20-3	Naphthalene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.008	ERDC USACE
PAHs	85-01-8	Phenanthrene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0435	ERDC USACE
PAHs	85-01-8	Phenanthrene	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.3	ERDC USACE
PAHs	85-01-8	Phenanthrene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	2.919	ERDC USACE
PAHs	85-01-8	Phenanthrene	Lumbrineridae misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.257	ERDC USACE
PAHs	85-01-8	Phenanthrene	Nephtys spp.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.093	ERDC USACE
PAHs	85-01-8	Phenanthrene	Cerebratulus lacteus	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.092	ERDC USACE
PAHs	85-01-8	Phenanthrene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.077	ERDC USACE
PAHs	85-01-8	Phenanthrene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.106	ERDC USACE
PAHs	129-00-0	Pyrene	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.1477	ERDC USACE
PAHs	129-00-0	Pyrene	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.36	ERDC USACE

ATTACHMENT B

USACE ERDC BSAF database records used in selection of BSAF for wildlife exposure assessment

Chemical Class	CASRN	Chemical	Organism	Age	Group	Type	Gulf Coast ^a	Prey Group ^b	Tissue Type	BSAF ^c	Source
PAHs	129-00-0	Pyrene	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	3.731	ERDC USACE
PAHs	129-00-0	Pyrene	Lumbrineridae misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.388	ERDC USACE
PAHs	129-00-0	Pyrene	Nephtys spp.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.003	ERDC USACE
PAHs	129-00-0	Pyrene	Cerebratulus lacteus	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.047	ERDC USACE
PAHs	129-00-0	Pyrene	Polychaete misc.	Adult	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.131	ERDC USACE
PAHs	129-00-0	Pyrene	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.242	ERDC USACE
PAHs	U-103	Total PAH (U=1/2; max ND)	POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0415	ERDC USACE
PAHs	U-102		POOLED ORGANISMS	Unknown	Misc	INVERT	NO	NA	Whole Body	0.0731	ERDC USACE
PCBs	12672-29-6	Aroclor-1248	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.641	ERDC USACE
PCBs	12672-29-6	Aroclor-1248	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	1.203	ERDC USACE
PCBs	12672-29-6	Aroclor-1248	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.717	ERDC USACE
PCBs	12672-29-6	Aroclor-1248	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.249	ERDC USACE
PCBs	12672-29-6	Aroclor-1248	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.293	ERDC USACE
PCBs	12672-29-6	Aroclor-1248	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.199	ERDC USACE
PCBs	12672-29-6	Aroclor-1248	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.255	ERDC USACE
PCBs	11097-69-1	Aroclor-1254	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.233	ERDC USACE
PCBs	11097-69-1	Aroclor-1254	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.68	ERDC USACE
PCBs	11097-69-1	Aroclor-1254	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.68	ERDC USACE
PCBs	11097-69-1	Aroclor-1254	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.285	ERDC USACE
PCBs	11097-69-1	Aroclor-1254	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.314	ERDC USACE
PCBs	11097-69-1	Aroclor-1254	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.134	ERDC USACE
PCBs	11097-69-1	Aroclor-1254	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.19	ERDC USACE
PCBs	11096-82-5	Aroclor-1260	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.572	ERDC USACE
PCBs	11096-82-5	Aroclor-1260	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.155	ERDC USACE
PCBs	11096-82-5	Aroclor-1260	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.17	ERDC USACE
PCBs	11096-82-5	Aroclor-1260	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.134	ERDC USACE
PCBs	11096-82-5	Aroclor-1260	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.105	ERDC USACE
PCBs	37680-65-2	PCB-018	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.053	ERDC USACE
PCBs	37680-65-2	PCB-018	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.096	ERDC USACE
PCBs	37680-65-2	PCB-018	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.08	ERDC USACE
PCBs	37680-65-2	PCB-018	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.061	ERDC USACE
PCBs	37680-65-2	PCB-018	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.019	ERDC USACE
PCBs	37680-65-2	PCB-018	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.028	ERDC USACE
PCBs	37680-65-2	PCB-018	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.007	ERDC USACE
PCBs	41464-39-5	PCB-044	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.219	ERDC USACE
PCBs	41464-39-5	PCB-044	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.308	ERDC USACE
PCBs	41464-39-5	PCB-044	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.282	ERDC USACE
PCBs	41464-39-5	PCB-044	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.106	ERDC USACE
PCBs	41464-39-5	PCB-044	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.083	ERDC USACE
PCBs	41464-39-5	PCB-044	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.148	ERDC USACE
PCBs	41464-39-5	PCB-044	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.035	ERDC USACE
PCBs	41464-40-8	PCB-049	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.268	ERDC USACE
PCBs	41464-40-8	PCB-049	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.234	ERDC USACE
PCBs	41464-40-8	PCB-049	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.1	ERDC USACE
PCBs	41464-40-8	PCB-049	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.07	ERDC USACE
PCBs	41464-40-8	PCB-049	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.077	ERDC USACE
PCBs	41464-40-8	PCB-049	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.061	ERDC USACE

ATTACHMENT B

USACE ERDC BSAF database records used in selection of BSAF for wildlife exposure assessment

Chemical Class	CASRN	Chemical	Organism	Age	Group	Type	Gulf Coast ^a	Prey Group ^b	Tissue Type	BSAF ^c	Source
PCBs	41464-40-8	PCB-049	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.057	ERDC USACE
PCBs	35693-99-3	PCB-052	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.321	ERDC USACE
PCBs	35693-99-3	PCB-052	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.261	ERDC USACE
PCBs	35693-99-3	PCB-052	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.101	ERDC USACE
PCBs	35693-99-3	PCB-052	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.13	ERDC USACE
PCBs	35693-99-3	PCB-052	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.04	ERDC USACE
PCBs	35693-99-3	PCB-052	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.03	ERDC USACE
PCBs	35693-99-3	PCB-052	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.05	ERDC USACE
PCBs	35693-99-3	PCB-052	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	8.26	ERDC USACE
PCBs	35693-99-3	PCB-052	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	3.93	ERDC USACE
PCBs	35693-99-3	PCB-052	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	3.91	ERDC USACE
PCBs	35693-99-3	PCB-052	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	9.06	ERDC USACE
PCBs	35693-99-3	PCB-052	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	19.2	ERDC USACE
PCBs	35693-99-3	PCB-052	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	3.54	ERDC USACE
PCBs	35693-99-3	PCB-052	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	2.34	ERDC USACE
PCBs	35693-99-3	PCB-052	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	1.67	ERDC USACE
PCBs	38380-02-8	PCB-087	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.224	ERDC USACE
PCBs	38380-02-8	PCB-087	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.161	ERDC USACE
PCBs	38380-02-8	PCB-087	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.098	ERDC USACE
PCBs	38380-02-8	PCB-087	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.073	ERDC USACE
PCBs	38380-02-8	PCB-087	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.065	ERDC USACE
PCBs	38380-02-8	PCB-087	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.038	ERDC USACE
PCBs	38380-02-8	PCB-087	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.05	ERDC USACE
PCBs	31508-00-6	PCB-118	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.174	ERDC USACE
PCBs	31508-00-6	PCB-118	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.286	ERDC USACE
PCBs	31508-00-6	PCB-118	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.046	ERDC USACE
PCBs	31508-00-6	PCB-118	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.089	ERDC USACE
PCBs	31508-00-6	PCB-118	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.09	ERDC USACE
PCBs	31508-00-6	PCB-118	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.04	ERDC USACE
PCBs	31508-00-6	PCB-118	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.065	ERDC USACE
PCBs	38380-07-3	PCB-128	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.121	ERDC USACE
PCBs	38380-07-3	PCB-128	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.082	ERDC USACE
PCBs	38380-07-3	PCB-128	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.058	ERDC USACE
PCBs	38380-07-3	PCB-128	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.064	ERDC USACE
PCBs	38380-07-3	PCB-128	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.034	ERDC USACE
PCBs	38380-07-3	PCB-128	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.022	ERDC USACE
PCBs	38380-07-3	PCB-128	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.02	ERDC USACE
PCBs	52663-63-5	PCB-151	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.639	ERDC USACE
PCBs	52663-63-5	PCB-151	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.119	ERDC USACE
PCBs	52663-63-5	PCB-151	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.13	ERDC USACE
PCBs	52663-63-5	PCB-151	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.107	ERDC USACE
PCBs	52663-63-5	PCB-151	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.172	ERDC USACE
PCBs	52663-63-5	PCB-151	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.029	ERDC USACE
PCBs	52663-63-5	PCB-151	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.075	ERDC USACE
PCBs	35065-27-1	PCB-153	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	4.79	ERDC USACE
PCBs	35065-27-1	PCB-153	Macoma nasuta	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	0.49	ERDC USACE
PCBs	35065-27-1	PCB-153	Neanthes virens	Adult	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	4.78	ERDC USACE

ATTACHMENT B

USACE ERDC BSAF database records used in selection of BSAF for wildlife exposure assessment

Chemical Class	CASRN	Chemical	Organism	Age	Group	Type	Gulf Coast ^a	Prey Group ^b	Tissue Type	BSAF ^c	Source
PCBs	35065-27-1	PCB-153	Neanthes virens	Adult	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	1.41	ERDC USACE
PCBs	35065-27-1	PCB-153	Neanthes virens	Adult	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	4.79	ERDC USACE
PCBs	35065-27-1	PCB-153	Nephtys incisa	Adult	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	0.424	ERDC USACE
PCBs	35065-27-1	PCB-153	Nephtys incisa	Adult	Worms - Marine/Estuarine	INVERT	NO	1C	Whole Body	0.2128	ERDC USACE
PCBs	35065-27-1	PCB-153	Yoldia limatula	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	0.8621	ERDC USACE
PCBs	35065-27-1	PCB-153	Yoldia limatula	Adult	Molluscs - Marine/Estuarine	INVERT	NO	1A	Whole Body	1.681	ERDC USACE
PCBs	38411-25-5	PCB-174	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.29	ERDC USACE
PCBs	38411-25-5	PCB-174	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	2.8	ERDC USACE
PCBs	52663-64-6	PCB-179	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.15	ERDC USACE
PCBs	52663-64-6	PCB-179	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	4.5	ERDC USACE
PCBs	35065-29-3	PCB-180	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.47	ERDC USACE
PCBs	35065-29-3	PCB-180	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	3	ERDC USACE
PCBs	35065-29-3	PCB-180	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.108	ERDC USACE
PCBs	35065-29-3	PCB-180	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.174	ERDC USACE
PCBs	35065-29-3	PCB-180	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.065	ERDC USACE
PCBs	35065-29-3	PCB-180	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.088	ERDC USACE
PCBs	35065-29-3	PCB-180	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.075	ERDC USACE
PCBs	35065-29-3	PCB-180	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.04	ERDC USACE
PCBs	35065-29-3	PCB-180	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.063	ERDC USACE
PCBs	52663-69-1	PCB-183	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.52	ERDC USACE
PCBs	52663-69-1	PCB-183	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	4.2	ERDC USACE
PCBs	52663-69-1	PCB-183	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.193	ERDC USACE
PCBs	52663-69-1	PCB-183	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.103	ERDC USACE
PCBs	52663-69-1	PCB-183	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.044	ERDC USACE
PCBs	52663-69-1	PCB-183	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.048	ERDC USACE
PCBs	52663-69-1	PCB-183	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.02	ERDC USACE
PCBs	52663-69-1	PCB-183	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.019	ERDC USACE
PCBs	52663-69-1	PCB-183	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.029	ERDC USACE
PCBs	52663-68-0	PCB-187	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.4	ERDC USACE
PCBs	52663-68-0	PCB-187	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	2.7	ERDC USACE
PCBs	35694-08-7	PCB-194	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.24	ERDC USACE
PCBs	35694-08-7	PCB-194	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	2.3	ERDC USACE
PCBs	35694-08-7	PCB-194	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.077	ERDC USACE
PCBs	35694-08-7	PCB-194	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.096	ERDC USACE
PCBs	35694-08-7	PCB-194	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.032	ERDC USACE
PCBs	35694-08-7	PCB-194	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.022	ERDC USACE
PCBs	35694-08-7	PCB-194	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.009	ERDC USACE
PCBs	35694-08-7	PCB-194	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.012	ERDC USACE
PCBs	35694-08-7	PCB-194	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.012	ERDC USACE
PCBs	42740-50-1	PCB-196	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.32	ERDC USACE
PCBs	42740-50-1	PCB-196	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	2.4	ERDC USACE
PCBs	52663-75-9	PCB-199	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.4	ERDC USACE
PCBs	52663-75-9	PCB-199	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.28	ERDC USACE
PCBs	52663-75-9	PCB-199	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	6.9	ERDC USACE
PCBs	52663-75-9	PCB-199	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	2.1	ERDC USACE
PCBs	52663-75-9	PCB-199	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.136	ERDC USACE
PCBs	52663-75-9	PCB-199	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.144	ERDC USACE

ATTACHMENT B
USACE ERDC BSAF database records used in selection of BSAF for wildlife exposure assessment

Chemical Class	CASRN	Chemical	Organism	Age	Group	Type	Gulf Coast ^a	Prey Group ^b	Tissue Type	BSAF ^c	Source
PCBs	52663-75-9	PCB-199	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.308	ERDC USACE
PCBs	52663-75-9	PCB-199	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.044	ERDC USACE
PCBs	52663-75-9	PCB-199	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.019	ERDC USACE
PCBs	52663-75-9	PCB-199	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.029	ERDC USACE
PCBs	52663-75-9	PCB-199	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.026	ERDC USACE
PCBs	40186-71-8	PCB-201	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.26	ERDC USACE
PCBs	40186-71-8	PCB-201	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	7.1	ERDC USACE
PCBs	2136-99-4	PCB-202	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.46	ERDC USACE
PCBs	2136-99-4	PCB-202	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	4.4	ERDC USACE
PCBs	40186-72-9	PCB-206	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.041	ERDC USACE
PCBs	40186-72-9	PCB-206	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	0.45	ERDC USACE
PCBs	52663-79-3	PCB-207	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.18	ERDC USACE
PCBs	52663-79-3	PCB-207	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	2.4	ERDC USACE
PCBs	52663-77-1	PCB-208	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.14	ERDC USACE
PCBs	52663-77-1	PCB-208	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	1.5	ERDC USACE
PCBs	2051-24-3	PCB-209	Palaemonetes pugio	Juvenile	Crustacea - Marine	INVERT	YES	1B	Whole Body	0.047	ERDC USACE
PCBs	2051-24-3	PCB-209	Mugil cephalus	Juvenile	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	0.42	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Lumbriculus variegatus	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	0.84	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Limnodrilus spp.	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	0.87	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Pimephales promelas	Juvenile	Fish - Bottom Feeders	FISH	YES	1	Whole Body	0.31	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Ameiurus melas	Unknown	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	1.91	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Cottus spp.	Adult	Fish - Bottom Feeders	FISH	NO	2B	Whole Body	1.45	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Catostomus macrocheilus	Adult	Fish - Bottom Feeders	FISH	NO	4A	Whole Body	3.99	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.27	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.884	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.546	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.217	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.316	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.329	ERDC USACE
PCBs	1336-36-3	Total PCBs (U=1/2; max ND)	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.199	ERDC USACE
PCBs	25512-42-9		Limnodrilus spp.	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	2.59	ERDC USACE
PCBs	25323-68-6		Limnodrilus spp.	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	0.71	ERDC USACE
PCBs	26914-33-0		Limnodrilus spp.	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	1.1	ERDC USACE
PCBs	25429-29-2		Limnodrilus spp.	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	0.91	ERDC USACE
PCBs	26601-64-9		Limnodrilus spp.	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	1.42	ERDC USACE
PCBs	28655-71-2		Limnodrilus spp.	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	2.15	ERDC USACE
PCBs	31472-83-0		Limnodrilus spp.	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	1.56	ERDC USACE
PCBs	53742-07-7		Limnodrilus spp.	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	1.25	ERDC USACE
PCBs	U-104		Limnodrilus spp.	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	0.79	ERDC USACE
PCBs	25512-42-9		Pimephales promelas	Juvenile	Fish - Bottom Feeders	FISH	YES	1	Whole Body	0.04	ERDC USACE
PCBs	25323-68-6		Pimephales promelas	Juvenile	Fish - Bottom Feeders	FISH	YES	1	Whole Body	0.11	ERDC USACE
PCBs	26914-33-0		Pimephales promelas	Juvenile	Fish - Bottom Feeders	FISH	YES	1	Whole Body	0.5	ERDC USACE
PCBs	25429-29-2		Pimephales promelas	Juvenile	Fish - Bottom Feeders	FISH	YES	1	Whole Body	0.73	ERDC USACE
PCBs	26601-64-9		Pimephales promelas	Juvenile	Fish - Bottom Feeders	FISH	YES	1	Whole Body	0.48	ERDC USACE
PCBs	28655-71-2		Pimephales promelas	Juvenile	Fish - Bottom Feeders	FISH	YES	1	Whole Body	0.54	ERDC USACE
PCBs	31472-83-0		Pimephales promelas	Juvenile	Fish - Bottom Feeders	FISH	YES	1	Whole Body	0.54	ERDC USACE
PCBs	53742-07-7		Pimephales promelas	Juvenile	Fish - Bottom Feeders	FISH	YES	1	Whole Body	0.58	ERDC USACE

ATTACHMENT B

USACE ERDC BSAF database records used in selection of BSAF for wildlife exposure assessment

Chemical Class	CASRN	Chemical	Organism	Age	Group	Type	Gulf Coast ^a	Prey Group ^b	Tissue Type	BSAF ^c	Source
PCBs	U-104		Pimephales promelas	Juvenile	Fish - Bottom Feeders	FISH	YES	1	Whole Body	0.27	ERDC USACE
PCBs	25512-42-9		Ameiurus melas	Unknown	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	0.3	ERDC USACE
PCBs	25323-68-6		Ameiurus melas	Unknown	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	0.83	ERDC USACE
PCBs	26914-33-0		Ameiurus melas	Unknown	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	2.92	ERDC USACE
PCBs	25429-29-2		Ameiurus melas	Unknown	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	4	ERDC USACE
PCBs	26601-64-9		Ameiurus melas	Unknown	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	3.37	ERDC USACE
PCBs	25512-42-9		Lumbriculus variegatus	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	0.21	ERDC USACE
PCBs	25323-68-6		Lumbriculus variegatus	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	0.51	ERDC USACE
PCBs	26914-33-0		Lumbriculus variegatus	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	1.35	ERDC USACE
PCBs	25429-29-2		Lumbriculus variegatus	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	1.3	ERDC USACE
PCBs	26601-64-9		Lumbriculus variegatus	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	1.03	ERDC USACE
PCBs	28655-71-2		Lumbriculus variegatus	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	0.98	ERDC USACE
PCBs	31472-83-0		Lumbriculus variegatus	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	0.93	ERDC USACE
PCBs	53742-07-7		Lumbriculus variegatus	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	0.82	ERDC USACE
PCBs	U-104		Lumbriculus variegatus	Adult	Worms - Freshwater	INVERT	YES	1C	Whole Body	0.57	ERDC USACE
PCBs	28655-71-2		Ameiurus melas	Unknown	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	3.59	ERDC USACE
PCBs	31472-83-0		Ameiurus melas	Unknown	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	3.51	ERDC USACE
PCBs	53742-07-7		Ameiurus melas	Unknown	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	2.54	ERDC USACE
PCBs	U-104		Ameiurus melas	Unknown	Fish - Bottom Feeders	FISH	YES	3A	Whole Body	2.26	ERDC USACE
Pesticides	72-54-8	4,4'-DDD	Cyprinus carpio	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	2	ERDC USACE
Pesticides	72-54-8	4,4'-DDD	Ictalurus punctatus	Adult	Fish - Bottom Feeders	FISH	YES	4B	Whole Body	4.05	ERDC USACE
Pesticides	72-54-8	4,4'-DDD	Catostomus macrocheilus	Adult	Fish - Bottom Feeders	FISH	NO	4A	Whole Body	4.4	ERDC USACE
Pesticides	72-54-8	4,4'-DDD	Oncorhynchus mykiss	Adult	Fish - Bottom Feeders	FISH	NO	4B	Whole Body	3.15	ERDC USACE
Pesticides	72-54-8	4,4'-DDD	Catostomus commersoni	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	2.7236	ERDC USACE
Pesticides	72-54-8	4,4'-DDD	Chasmagnathus granulata	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	3	ERDC USACE
Pesticides	72-54-8	4,4'-DDD	Chasmagnathus granulata	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	2	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Salmo trutta	Adult	Fish - Mid-Water Feeders	FISH	NO	4B	Whole Body	26	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Catostomus columbianus	Adult	Fish - Bottom Feeders	FISH	NO	3A	Whole Body	4.36	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Cyprinus carpio	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	41.4714	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Ictalurus punctatus	Adult	Fish - Bottom Feeders	FISH	YES	4B	Whole Body	17.5	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Catostomus macrocheilus	Adult	Fish - Bottom Feeders	FISH	NO	4A	Whole Body	18.275	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Gambusia holbrooki	Adult	Fish - Mid-Water Feeders	FISH	NO	1	Whole Body	14.5333	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Cottus beldingii	Adult	Fish - Bottom Feeders	FISH	NO	2B	Whole Body	8.6	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Oncorhynchus mykiss	Adult	Fish - Bottom Feeders	FISH	NO	4B	Whole Body	6.02	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Cottus spp.	Adult	Fish - Bottom Feeders	FISH	NO	2B	Whole Body	5.225	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Micropterus dolomieu	Adult	Fish - Mid-Water Feeders	FISH	YES	3B	Whole Body	30	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Catostomus commersoni	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	10.3853	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Mercenaria spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.529	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Nucula spp.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	1.678	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.546	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Nephtys spp.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.859	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Cerebratulus lacteus	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.458	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.23	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.328	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Chasmagnathus granulata	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	10	ERDC USACE
Pesticides	72-55-9	4,4'-DDE	Chasmagnathus granulata	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	32	ERDC USACE
Pesticides	50-29-3	4,4'-DDT	Catostomus columbianus	Adult	Fish - Bottom Feeders	FISH	NO	3A	Whole Body	0.27	ERDC USACE

ATTACHMENT B

USACE ERDC BSAF database records used in selection of BSAF for wildlife exposure assessment

Chemical Class	CASRN	Chemical	Organism	Age	Group	Type	Gulf Coast ^a	Prey Group ^b	Tissue Type	BSAF ^c	Source
Pesticides	50-29-3	4,4'-DDT	<i>Cyprinus carpio</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	1.365	ERDC USACE
Pesticides	50-29-3	4,4'-DDT	<i>Catostomus macrocheilus</i>	Adult	Fish - Bottom Feeders	FISH	NO	4A	Whole Body	1.37	ERDC USACE
Pesticides	50-29-3	4,4'-DDT	<i>Oncorhynchus mykiss</i>	Adult	Fish - Bottom Feeders	FISH	NO	4B	Whole Body	0.715	ERDC USACE
Pesticides	50-29-3	4,4'-DDT	<i>Cottus spp.</i>	Adult	Fish - Bottom Feeders	FISH	NO	2B	Whole Body	2.15	ERDC USACE
Pesticides	50-29-3	4,4'-DDT	<i>Micropterus dolomieu</i>	Adult	Fish - Mid-Water Feeders	FISH	YES	3B	Whole Body	5.2	ERDC USACE
Pesticides	50-29-3	4,4'-DDT	<i>Catostomus commersoni</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	1.0471	ERDC USACE
Pesticides	50-29-3	4,4'-DDT	<i>Nucula spp.</i>	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.041	ERDC USACE
Pesticides	50-29-3	4,4'-DDT	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.087	ERDC USACE
Pesticides	50-29-3	4,4'-DDT	<i>Cerebratulus lacteus</i>	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.018	ERDC USACE
Pesticides	50-29-3	4,4'-DDT	<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	2	ERDC USACE
Pesticides	50-29-3	4,4'-DDT	<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	1	ERDC USACE
Pesticides	309-00-2	Aldrin	<i>Nephtys spp.</i>	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.278	ERDC USACE
Pesticides	309-00-2	Aldrin	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.15	ERDC USACE
Pesticides	309-00-2	Aldrin	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.098	ERDC USACE
Pesticides	5103-71-9	alpha-Chlordane	<i>Cyprinus carpio</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	3.4	ERDC USACE
Pesticides	5103-71-9	alpha-Chlordane	<i>Cottus spp.</i>	Adult	Fish - Bottom Feeders	FISH	NO	2B	Whole Body	3.5	ERDC USACE
Pesticides	5103-71-9	alpha-Chlordane	<i>Micropterus dolomieu</i>	Adult	Fish - Mid-Water Feeders	FISH	YES	3B	Whole Body	6.5	ERDC USACE
Pesticides	5103-71-9	alpha-Chlordane	<i>Catostomus commersoni</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	2.518	ERDC USACE
Pesticides	319-86-8	delta-BHC	<i>Cerebratulus lacteus</i>	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.065	ERDC USACE
Pesticides	319-86-8	delta-BHC	<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	2	ERDC USACE
Pesticides	319-86-8	delta-BHC	<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	0.3	ERDC USACE
Pesticides	7421-93-4	Endrin	<i>Nucula spp.</i>	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.009	ERDC USACE
Pesticides	58-89-9	gamma-BHC (Lindane)	<i>Cottus spp.</i>	Adult	Fish - Bottom Feeders	FISH	NO	2B	Whole Body	2.5	ERDC USACE
Pesticides	58-89-9	gamma-BHC (Lindane)	<i>Cerebratulus lacteus</i>	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.052	ERDC USACE
Pesticides	58-89-9	gamma-BHC (Lindane)	<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	1	ERDC USACE
Pesticides	58-89-9	gamma-BHC (Lindane)	<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	0.2	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	<i>Cyprinus carpio</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	1.5	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	<i>Catostomus macrocheilus</i>	Adult	Fish - Bottom Feeders	FISH	NO	4A	Whole Body	0.59	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	<i>Cottus spp.</i>	Adult	Fish - Bottom Feeders	FISH	NO	2B	Whole Body	1.1	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	<i>Catostomus commersoni</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	1.453	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	<i>Mercenaria spp.</i>	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.023	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	<i>Nucula spp.</i>	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.018	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	Lumbrineridae misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.005	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	<i>Nephtys spp.</i>	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.005	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	<i>Cerebratulus lacteus</i>	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.006	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	Polychaete misc.	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.004	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	Mollusca misc.	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.009	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	2	ERDC USACE
Pesticides	12789-03-6	gamma-Chlordane	<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	0.4	ERDC USACE
Pesticides	1024-57-3	Heptachlor Epoxide	<i>Catostomus commersoni</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	0.83	ERDC USACE
Pesticides	1024-57-3	Heptachlor Epoxide	<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	1	ERDC USACE
Pesticides	1024-57-3	Heptachlor Epoxide	<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	0.3	ERDC USACE
Pesticides	72-43-5	Methoxychlor	<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	2	ERDC USACE
Pesticides	72-43-5	Methoxychlor	<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	0.4	ERDC USACE
Pesticides	5103-73-1		<i>Cottus spp.</i>	Adult	Fish - Bottom Feeders	FISH	NO	2B	Whole Body	7.3	ERDC USACE
Pesticides	5103-73-1		<i>Micropterus dolomieu</i>	Adult	Fish - Mid-Water Feeders	FISH	YES	3B	Whole Body	14	ERDC USACE
Pesticides	5103-73-1		<i>Catostomus commersoni</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	4.578	ERDC USACE

ATTACHMENT B
USACE ERDC BSAF database records used in selection of BSAF for wildlife exposure assessment

Chemical Class	CASRN	Chemical	Organism	Age	Group	Type	Gulf Coast ^a	Prey Group ^b	Tissue Type	BSAF ^c	Source
Pesticides	1861-32-1		<i>Catostomus macrocheilus</i>	Adult	Fish - Bottom Feeders	FISH	NO	4A	Whole Body	0.083	ERDC USACE
Pesticides	1861-32-1		<i>Cyprinus carpio</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	0.52	ERDC USACE
Pesticides	60-57-1		<i>Catostomus macrocheilus</i>	Adult	Fish - Bottom Feeders	FISH	NO	4A	Whole Body	0.64	ERDC USACE
Pesticides	60-57-1		<i>Cyprinus carpio</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	3.6	ERDC USACE
Pesticides	60-57-1		<i>Micropterus salmoides</i>	Adult	Fish - Mid-Water Feeders	FISH	YES	4B	Whole Body	11	ERDC USACE
Pesticides	60-57-1		<i>Catostomus macrocheilus</i>	Adult	Fish - Bottom Feeders	FISH	NO	4A	Whole Body	4.9	ERDC USACE
Pesticides	60-57-1		<i>Cottus spp.</i>	Adult	Fish - Bottom Feeders	FISH	NO	2B	Whole Body	5.72	ERDC USACE
Pesticides	60-57-1		<i>Catostomus commersoni</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	2.4	ERDC USACE
Pesticides	53-19-0		<i>Cyprinus carpio</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	0.53	ERDC USACE
Pesticides	53-19-0		<i>Catostomus commersoni</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	2.4	ERDC USACE
Pesticides	789-02-6		<i>Catostomus columbianus</i>	Adult	Fish - Bottom Feeders	FISH	NO	3A	Whole Body	0.49	ERDC USACE
Pesticides	789-02-6		<i>Oncorhynchus mykiss</i>	Adult	Fish - Bottom Feeders	FISH	NO	4B	Whole Body	1.4	ERDC USACE
Pesticides	789-02-6		<i>Catostomus commersoni</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	0.74	ERDC USACE
Pesticides	39765-80-5		<i>Micropterus salmoides</i>	Adult	Fish - Mid-Water Feeders	FISH	YES	4B	Whole Body	19	ERDC USACE
Pesticides	39765-80-5		<i>Cottus spp.</i>	Adult	Fish - Bottom Feeders	FISH	NO	2B	Whole Body	6.1667	ERDC USACE
Pesticides	39765-80-5		<i>Micropterus dolomieu</i>	Adult	Fish - Mid-Water Feeders	FISH	YES	3B	Whole Body	21	ERDC USACE
Pesticides	39765-80-5		<i>Catostomus commersoni</i>	Adult	Fish - Bottom Feeders	FISH	YES	4A	Whole Body	4.7254	ERDC USACE
Pesticides	319-84-6		<i>Mercenaria spp.</i>	Unknown	Molluscs - Marine/Estuarine	INVERT	YES	1A	Whole Body	0.74	ERDC USACE
Pesticides	1031-07-8		<i>Nephtys spp.</i>	Unknown	Worms - Marine/Estuarine	INVERT	YES	1C	Whole Body	0.009	ERDC USACE
Pesticides	60-57-1		<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	14	ERDC USACE
Pesticides	1031-07-8		<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	5	ERDC USACE
Pesticides	319-84-6		<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	0.4	ERDC USACE
Pesticides	60-57-1		<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	3	ERDC USACE
Pesticides	1031-07-8		<i>Chasmagnathus granulata</i>	Unknown	Crustacea - Marine	INVERT	NO	1B	Whole Body	0.4	ERDC USACE

CASRN - Chemical Abstract Service Registry Number

a - Is the species native to the Gulf Coast: Yes/No

b - Prey Group assignment based on classification scheme described in Anchor (2008)

c - BSAF - Biota Sediment Accumulation Factor; based on sediment dry weight and tissue wet weight basis (DW/WW)

ATTACHMENT C – FINAL COPC TABLES

Table 4-2 Revised
Deterministic Total Daily Intake Model Parameters for Aquatic Dependent Wildlife

Parameter	Receptor Group Receptor Units	Piscivorous Birds Belted Kingfisher	Sediment-probing birds Spotted Sandpiper	Carnivorous Birds Great Blue Heron	Omnivorous Mammals Raccoon	Carnivorous Mammals River Otter	Carnivorous Mammals Mink	Brown Pelican Double-crested cormorant	Example from Response to Comments
Body weight	g	136 a	42.5 a	2229 a	3990 a	7430 b	852 c	2300 o	1000
AE _{fish}	unitless	0.62 e	NA	0.61 e	0.83 e	0.84 e	0.84 e	0.62 e	0.9
GE _{fish}	kcal/kg _{fish} WW	850 f	NA	850 f	850 f	850 f	850 f	850 f	1200
ME _{fish}	kcal/kg _{fish} WW	527	NA	518.5	705.5	714	714	527	1080
AE _{invertebrates}	unitless	NA	0.61 e	NA	NA	NA	NA	0.61 e	0.8
GE _{invertebrates}	kcal/kg _{inverts} WW	NA	750 f	NA	NA	NA	NA	750 f	950
ME _{invertebrates}	kcal/kg _{inverts} WW	NA	457.5	NA	NA	NA	NA	457.5	760
MEavg	kcal/kg _{diet} WW	527	457.5	518.5	705.5	714	714	520.05	888
a	unitless	14.25 r	8.13 s	14.25 r	6.03 t	2.23 u	2.23 u	14.25 m	14.25
b	unitless	0.659 r	0.77 s	0.659 r	0.678 t	0.85 u	0.85 u	0.659 m	0.659
FMR (Average Size Receptor)	kcal/day/kg BW	637.4980675	819.9018525	245.6462321	99.7711127	139.9127578	193.6153118	243.0336718	200
C _{sediment,DW}	mg/kg	chemical specific	chemical specific	chemical specific	chemical specific	chemical specific	chemical specific	chemical specific	chemical specific
BSAF	unitless	chemical specific	chemical specific	chemical specific	chemical specific	chemical specific	chemical specific	chemical specific	chemical specific
P _{diet}	unitless	100% Group 1 & 2 Fish d	Group 1 Invertebrates d	Group 1 & 2 Fish c	Group 1 Fish d	50% Group 1 / 50% Group 4 Fish d	50% Group 1 / 50% Group 4 Fish d	90% Group 1, 2 and 3 fish and 10% class 1 invertebrates q	0.4 fish; 0.6 inverts
P _{sediment}	unitless	NA	0.3 g	NA	0.094 h	0.013 i,j	0.013 i	0.01 n	0.1
Solids content of sediment	%	NA	63 k	NA	63 k	63 k	63 k	63 k	40
NIRtotal	gWW/gBW-d	1.210	1.792	0.474	0.141	0.196	0.271	0.467	0.225
NIRfish	gWW/gBW-d	1.210	NA	0.474	0.141	0.196	0.271	0.421	0.090
NIRinverts	gWW/gBW-d	NA	1.792	NA	NA	NA	NA	0.047	0.135
IRfish	gDW/d	46.887	NA	300.965	160.815	414.947	65.845	275.700	25.676
IRinverts	gDW/d	NA	15.995	NA	NA	NA	NA	22.572	28.378
IRtotal	gDW/d	46.887	15.995	300.965	160.815	414.947	65.845	298.272	54.054
Solids content of fish	%	28.5 v	NA	28.5 v	28.5 v	28.5 v	28.5 v	28.5 v	28.5
Solids content of invertebrates	%	NA	21 w	NA	NA	NA	NA	21 w	21

Notes

a - Average for adults (both sexes) (cited in USEPA 1993)

d - CDM. 2002. Calcasieu Estuary Remedial Investigation / Feasibility Study (RI/FS): Baseline Ecological Risk Assessment. Appendix G: Deterministic Ecological Risk Assessment for Aquatic and Wildlife Receptors

e - See AE and GE derivation worksheet

f - See AE and GE derivation worksheet

g - USEPA. 1993. Semi-palmated sandpiper value used as surrogate

h - Based on empirical data (Beyer et al., 1994)

i - Based on percent sand in mink scat (Hamilton, 1940)

j - Mink value used as surrogate

k - Average solids content of surface sediment in Patrick Bayou

l - Average of male/female (Dunning 1993, as cited by USGS 2007)

m - Power (b) and slope (a) terms for marine birds (Nagy 1999)

n - professional judgment used, pelicans feed from top 1m (3.3 feet) of water

o - Double crested cormorant used as surrogate, Mean adult/juvenile, male/female from East Texas

p - Fish less than 25 cm, per FWS HSI (FWS 1985)

q - Fish portion from Campo et al 1993, as cited in Cal EPA Ecotox database http://www.oehha.org/cal_ecotox/species_reports.htm, invertebrates portion professional judgment

r - Power (b) and slope (a) terms for marine birds (Nagy 1999)

s - Power (b) and slope (a) terms for Charadriiformes (Nagy 1999)

t - Power (b) and slope (a) terms for omnivores (Nagy 1999)

u - Power (b) and slope (a) terms for carnivores (Nagy 1999)

v - Average percent solids for bony fish (Table 4-1, USEPA 1993, WEFH)

w - Average percent solids for all aquatic invertebrates (Table 4-1, USEPA 1993, WEFH)

Table 4-9 Revised
COPC Status for Aquatic Dependent Wildlife and Fish Receptors

Chemical	Double-crested cormorant (Brown pelican)*	Belted Kingfisher (Piscivorous bird)	Spotted sandpiper (Sediment-probing bird)	Great blue heron (Carnivorous bird)	Avian COPC	Raccoon (Omnivorous mammal)	River otter (piscivorous mammal)	Mink (Piscivorous mammal)	Mammalian COPC	Carnivorous Fish COPC
Arsenic	Yes	Uncertain	Yes	Uncertain	Yes	Yes	Yes	Yes	Yes	Yes
Cadmium	No	No	Uncertain	No	Uncertain	No	No	No	No	Uncertain
Chromium	Yes	Uncertain	Yes	Uncertain	Yes	No	No	No	No	Uncertain
Copper	No	No	Uncertain	No	Uncertain	No	No	No	No	Uncertain
Lead	Yes	Uncertain	Yes	Uncertain	Yes	No	No	No	No	Uncertain
Mercury	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nickel	No	No	No	No	No	No	No	No	No	See note a
Selenium	No	No	Uncertain	No	Uncertain	Uncertain	Yes	Uncertain	Yes	Uncertain
Zinc	Yes	Yes	Yes	Uncertain	Yes	No	No	No	No	Uncertain
2-Methylnaphthalene	Yes	Uncertain	Uncertain	Uncertain	Uncertain	No	No	No	No	No
Acenaphthene	Yes	Uncertain	Uncertain	Uncertain	Uncertain	No	No	No	No	No
Acenaphthylene	Yes	Uncertain	Uncertain	Uncertain	Uncertain	No	No	No	No	No
Anthracene	Yes	Uncertain	Uncertain	Uncertain	Uncertain	No	No	No	No	No
Benzo(a)anthracene	No	No	No	No	No	No	No	No	No	No
Benzo(a)pyrene	No	No	No	No	No	No	No	No	No	No
Benzo(b)fluoranthene	No	No	No	No	No	No	No	No	No	No
Benzo(g,h,i)perylene	No	No	No	No	No	No	No	No	No	No
Benzo(k)fluoranthene	No	No	No	No	No	No	No	No	No	No
Chrysene	No	No	No	No	No	No	No	No	No	See note a
Dibenz(a,h)anthracene	No	No	No	No	No	No	No	No	No	No
Fluoranthene	No	No	No	No	No	Uncertain	No	No	Uncertain	No
Fluorene	Yes	Uncertain	Uncertain	No	Uncertain	No	No	No	No	No
Indeno(1,2,3-cd)pyrene	No	No	No	No	No	No	No	No	No	No
Naphthalene	Yes	Uncertain	Uncertain	Uncertain	--	No	No	No	--	No
Phenanthrene	Yes	Uncertain	Uncertain	Uncertain	Uncertain	No	No	No	No	No
Pyrene	No	No	No	No	No	No	No	No	No	No
Total HPAH 16	No	No	Uncertain	No	Uncertain	Uncertain	Uncertain	Uncertain	Uncertain	No
Total LPAH 16	Yes	Yes	Yes	Yes	Yes	Uncertain	Uncertain	Uncertain	Uncertain	Uncertain
Total PAH 16	No	No	Uncertain	No	Uncertain	--	--	--	--	Uncertain
Aroclor 1248	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	See note a
Aroclor 1254	Yes	Uncertain	Yes	Uncertain	Yes	Uncertain	Uncertain	Uncertain	Uncertain	No
Aroclor 1260	No	No	No	No	No	No	Uncertain	Uncertain	Uncertain	See note a
Total PCB Aroclors	--	Yes	--	--	--	--	--	--	--	Yes
PCB-077						See PCB Congener TEQ				
PCB-081						See PCB Congener TEQ				
PCB-105						See PCB Congener TEQ				
PCB-114						See PCB Congener TEQ				
PCB-118						See PCB Congener TEQ				
PCB-123						See PCB Congener TEQ				
PCB-126						See PCB Congener TEQ				
PCB-156						See PCB Congener TEQ				
PCB-157						See PCB Congener TEQ				
PCB-167						See PCB Congener TEQ				
PCB-169						See PCB Congener TEQ				
PCB-189						See PCB Congener TEQ				
PCB congeners TEQ	Yes	Yes	Yes	Yes	Yes	Uncertain	Uncertain	Uncertain	Uncertain	No
1,2,3,4,6,7,8-HxCDD						See Dioxin/furan congener TEQ				
1,2,3,4,6,7,8-HxCDF						See Dioxin/furan congener TEQ				
1,2,3,4,7,8,9-HxCDF						See Dioxin/furan congener TEQ				
1,2,3,4,7,8-HxCDD						See Dioxin/furan congener TEQ				
1,2,3,4,7,8-HxCDF						See Dioxin/furan congener TEQ				

Table 4-9 Revised
COPC Status for Aquatic Dependent Wildlife and Fish Receptors

Chemical	Double-crested cormorant (Brown pelican)*	Belted Kingfisher (Piscivorous bird)	Spotted sandpiper (Sediment-probing bird)	Great blue heron (Carnivorous bird)	Avian COPC	Raccoon (Omnivorous mammal)	River otter (piscivorous mammal)	Mink (Piscivorous mammal)	Mammalian COPC	Carnivorous Fish COPC
1,2,3,6,7,8-HxCDD					See Dioxin/furan congener TEQ					
1,2,3,6,7,8-HxCDF					See Dioxin/furan congener TEQ					
1,2,3,7,8,9-HxCDD					See Dioxin/furan congener TEQ					
1,2,3,7,8,9-HxCDF					See Dioxin/furan congener TEQ					
1,2,3,7,8-PeCDD					See Dioxin/furan congener TEQ					
1,2,3,7,8-PeCDF					See Dioxin/furan congener TEQ					
2,3,4,6,7,8-HxCDF					See Dioxin/furan congener TEQ					
2,3,4,7,8-PeCDF					See Dioxin/furan congener TEQ					
2,3,7,8-TCDD					See Dioxin/furan congener TEQ					
2,3,7,8-TCDF					See Dioxin/furan congener TEQ					
OCDD					See Dioxin/furan congener TEQ					
OCDF					See Dioxin/furan congener TEQ					
Dioxin/furan congener TEQ	Yes	Uncertain	Yes	Uncertain	Yes	Uncertain	Yes	Yes	Yes	Uncertain
4,4'-DDD	Yes	Uncertain	Yes	Uncertain	Yes	No	No	No	No	Uncertain
4,4'-DDE	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Uncertain
4,4'-DDT	Yes	Yes	Yes	Yes	Yes	No	Uncertain	Uncertain	Uncertain	No
Aldrin	No	Uncertain	Uncertain	No	Uncertain	No	No	No	No	Uncertain
Endrin	No	Uncertain	Uncertain	No	Uncertain	No	No	No	No	No
alpha-Chlordane	No	No	No	No	No	No	No	No	No	No
gamma-BHC (Lindane)	No	No	No	No	No	No	No	No	No	No
Heptachlor Epoxide	No	No	Uncertain	No	Uncertain	No	No	No	No	No
Endosulfan I	No	No	No	No	No	No	No	No	No	No
Endosulfan II	No	No	No	No	No	No	No	No	No	Uncertain
gamma-Chlordane	No	No	No	No	No	No	No	No	No	No
Methoxychlor	No	No	No	No	No	No	No	No	No	No
Total Chlordane (alpha & gamma)	No	No	No	No	No	No	No	No	No	Uncertain
Total DDT	Yes	Yes	Yes	Yes	Yes	No	Uncertain	Uncertain	Uncertain	See note a
Hexachlorobenzene	Yes	Yes	Yes	Uncertain	Yes	Uncertain	Uncertain	Uncertain	Uncertain	See note a
Hexachlorobutadiene	Yes	Uncertain	Uncertain	No	Uncertain	No	No	No	No	No
Hexachloroethane	No	Uncertain	Uncertain	No	Uncertain	No	No	No	No	See note a
1,2-Dichlorobenzene	No	No	No	No	No	No	No	No	NA	No
1,3-Dichlorobenzene	Yes	Yes	Yes	Yes	Yes	No	No	No	NA	Uncertain
1,4-Dichlorobenzene	Yes	Uncertain	Uncertain	Uncertain	Uncertain	No	No	No	NA	No
bis(2-ethylhexyl)phthalate	No	No	No	No	No	No	No	No	No	Not evaluated
1,1,1-Trichloroethane	See note a	See note a	See note a	See note a	See note a	No	No	No	No	Not evaluated
1,1,2,2-Tetrachloroethane	See note a	See note a	See note a	See note a	See note a	See note a	See note a	See note a	See note a	Not evaluated
Acrylonitrile	See note a	See note a	See note a	See note a	See note a	See note a	See note a	See note a	See note a	Not evaluated
Benzene	See note a	See note a	See note a	See note a	See note a	See note a	No	No	No	Not evaluated
Chlorobenzene	See note a	See note a	See note a	See note a	See note a	See note a	See note a	See note a	See note a	Not evaluated
Toluene	See note a	See note a	See note a	See note a	See note a	See note a	No	See note a	No	Not evaluated
Total xylene	See note a	See note a	See note a	See note a	See note a	See note a	No	See note a	No	Not evaluated

Note:

*NOAEL based selection criteria

a - PCOPC not evaluated due to lack of available effects values (i.e. TRV) for that receptor. See text for further description.

Shaded cells indicate change in COPC status based on response to comments from TCEQ

Table 5-1 Revised
Ecological Risk Assessment Target Analyte List by Exposure Media

Chemical Class	Chemical	Sediment ^a	Tissue ^b	Porewater ^c	Surface Water ^{d,e}
CONV	Ammonia	X	--	--	--
CONV	Nitrate as N	--	--	--	X
CONV	Total Kjeldahl Nitrogen, Total	--	--	--	X
METAL	Arsenic	X	X	--	--
METAL	Cadmium	X	X	--	--
METAL	Chromium	X	X	--	--
METAL	Copper	X	X	X	--
METAL	Lead	X	X	--	--
METAL	Mercury	X	X	X	X ⁱ
METAL	Nickel	X	X	X	--
METAL	Selenium	X	X	--	X ⁱ
METAL	Zinc	X	X	--	--
PAH	2-Methylnaphthalene	X	X	--	TBD
PAH	Acenaphthene	X	X	X	TBD
PAH	Acenaphthylene	X	X	--	TBD
PAH	Anthracene	X	X	--	TBD
PAH	Benzo(a)anthracene	X	X ^g	--	TBD
PAH	Benzo(a)pyrene	X	X ^g	--	TBD
PAH	Benzo(b)fluoranthene	X	X ^g	--	TBD
PAH	Benzo(e)pyrene	X	X ^g	--	TBD
PAH	Benzo(g,h,i)perylene	X	X ^g	--	TBD
PAH	Benzo(k)fluoranthene	X	X ^g	--	TBD
PAH	Chrysene	X	X	--	TBD
PAH	Dibenzo(a,h)anthracene	X	X ^g	--	TBD
PAH	Fluoranthene	X	X	--	TBD
PAH	Fluorene	X	X	--	TBD
PAH	Indeno(1,2,3-cd)pyrene	X	X ^g	--	TBD
PAH	Naphthalene	X	X	--	TBD
PAH	Perylene	X	X ^g	--	TBD
PAH	Phenanthrene	X	X	--	TBD
PAH	Pyrene	X	X	--	TBD
PAH	Total HPAH	*	X	X	--
PAH	Total LPAH	*	X	X	--
PAH	Total PAH	*	X	X	--
PAH	C1-Chrysenes	X ^f	--	--	--
PAH	C1-Fluoranthene/Pyrene	X ^f	--	--	--
PAH	C1-Fluorenes	X ^f	--	--	--
PAH	C1-naphthalenes	X ^f	--	--	--
PAH	C1-Phenanthrenes/Anthracenes	X ^f	--	--	--
PAH	C2-Chrysenes	X ^f	--	--	--
PAH	C2-Fluorenes	X ^f	--	--	--
PAH	C2-Naphthalenes	X ^f	--	--	--
PAH	C2-Phenanthrenes/Anthracenes	X ^f	--	--	--
PAH	C3-Chrysenes	X ^f	--	--	--
PAH	C3-Fluorenes	X ^f	--	--	--
PAH	C3-Naphthalenes	X ^f	--	--	--
PAH	C3-Phenanthrenes/Anthracenes	X ^f	--	--	--
PAH	C4-Chrysenes	X ^f	--	--	--

Table 5-1 Revised
Ecological Risk Assessment Target Analyte List by Exposure Media

Chemical Class	Chemical	Sediment ^a	Tissue ^b	Porewater ^c	Surface Water ^{d,e}
PAH	C4-Naphthalenes	X ^f	--	--	--
PAH	C4-Phenanthrenes/Anthracenes	X ^f	--	--	--
D/F	1,2,3,4,6,7,8-HxCDD	X	X	--	TBD
D/F	1,2,3,4,6,7,8-HxCDF	X	X	--	TBD
D/F	1,2,3,4,7,8,9-HxCDF	X	X	--	TBD
D/F	1,2,3,4,7,8-HxCDD	X	X	--	TBD
D/F	1,2,3,4,7,8-HxCDF	X	X	--	TBD
D/F	1,2,3,6,7,8-HxCDD	X	X	--	TBD
D/F	1,2,3,6,7,8-HxCDF	X	X	--	TBD
D/F	1,2,3,7,8,9-HxCDF	X	X	--	TBD
D/F	1,2,3,7,8-PeCDD	X	X	--	TBD
D/F	1,2,3,7,8-PeCDF	X	X	--	TBD
D/F	2,3,4,6,7,8-HxCDF	X	X	--	TBD
D/F	2,3,4,7,8-PeCDF	X	X	--	TBD
D/F	2,3,7,8-TCDD	X	X	--	TBD
D/F	2,3,7,8-TCDF	X	X	--	TBD
D/F	OCDD	X	X	--	TBD
D/F	OCDF	X	X	--	TBD
D/F	2,3,7,8-TCDF TEQ	*	X	X	--
PCB	Aroclor 1248 ^j	X	X	--	TBD
PCB	Aroclor 1254 ^j	X	X	--	TBD
PCB	Aroclor 1260 ^j	X	X	--	TBD
PCB	PCB Congeners ^h	X	X	X	TBD
PCB	Total PCB Congeners	*	X	X	X
PCB	Total PCB Aroclors ^j	*	X	X	--
PEST	DDD (4,4'- and 2,4')	X	X	--	TBD
PEST	DDE (4,4'- and 2,4')	X	X	--	TBD
PEST	DDT (4,4'- and 2,4')	X	X	X	TBD
PEST	Total DDT	*	X	X	X
PEST	Aldrin	X	X	--	TBD
PEST	Chlordane, alpha	X	X	--	TBD
PEST	Chlordane, gamma	X	X	--	TBD
PEST	Total Chlordane (alpha & gamma)	*	X	X	--
PEST	Endosulfan I	X	--	--	TBD
PEST	Endosulfan II	X	X	--	TBD
PEST	Endrin	X	X	--	TBD
PEST	gamma-BHC (Lindane)	X	--	--	TBD
PEST	Heptachlor Epoxide	X	X	--	TBD
PEST	Methoxychlor	X	--	--	TBD
SVOC	bis(2-Ethylhexyl)phthalate	X	--	--	TBD
SVOC	Benzidine	X	--	--	TBD
SVOC	bis(2-Chloroisopropyl)ether	X	--	--	TBD
SVOC	Di-n-octylphthalate	X	--	--	TBD
SVOC	Hexachlorobenzene	X	X	--	TBD
SVOC	Hexachlorobutadiene	X	X	--	TBD
SVOC	Hexachloroethane	X	X	--	TBD
VOC	1,2-Dichlorobenzene	X	--	--	TBD
VOC	1,3-Dichlorobenzene	X	X	--	TBD

Table 5-1 Revised
Ecological Risk Assessment Target Analyte List by Exposure Media

Chemical Class	Chemical	Sediment ^a	Tissue ^b	Porewater ^c	Surface Water ^{d,e}
VOC	1,4-Dichlorobenzene	X	X	--	TBD
VOC	4-Isopropyltoluene	X	--	--	TBD
VOC	Benzene	X	--	--	TBD
VOC	Chlorobenzene	X	--	--	TBD
VOC	Ethylbenzene	X	--	--	TBD
VOC	Isopropylbenzene	X	--	X	TBD
VOC	n-Butylbenzene	X	--	--	TBD
VOC	n-Propylbenzene	X	--	--	TBD
VOC	sec-Butylbenzene	X	--	--	TBD
VOC	tert-Butylbenzene	X	--	--	TBD
VOC	Toluene	X	--	--	TBD
VOC	Total xylene	*	X	--	--

Notes:

*Calculated total value

a - Sediment COPC target analytes selected based on status as COPC or Uncertain COPC for aquatic receptors or wildlife

b - Tissue COPC target analytes selected based on status as COPC or Uncertain COPC for wildlife or carnivorous fish

c - Porewater COPC target analytes selected based on status as COPC for aquatic plants

d - Surface water COPC target analytes selected based on status as COPC or Uncertain COPC for aquatic receptors and potential bioaccumulation (i.e. mercury and selenium)

e - TBD chemicals have not been analyzed to date in surface water and are considered chemicals of interest (COI) and will be considered as target analytes for surface water

f - Alkylated PAH homologs were not evaluated directly in the COPC screening but were added to the COPC list based on their recommended inclusion in equilibrium partitioning benchmark methods

g - These PAH were not assessed directly for wildlife receptors but were added as tissue COPC based on their inclusion in the Total PAH calculation

h - Congeners 1-209

i - Based on potential bioaccumulation

j - Aroclors are included primarily for comparison purposes to PCB Congener results.

TBD - To be determined

Table C-7 Revised
Total Daily Intake and Hazard Quotient Worksheet for Double Crested Cormorant

Scenario: Hypothetical T&E receptor of concern - Double Crested Cormorant

Exposure Assessment

Exposure Model

$$ADD_{total} = ADD_{pot,diet} + ADD_{pot, sediment} \quad ADD_{pot,diet} = (C_k \times NIR_k)_{fish} + (C_k \times NIR_k)_{inverts}$$

$$ADD_{pot, sed} = (C_s \times FS \times IR_{total}) / BW$$

Variables

ADDtotal potential average daily dose (diet and sediment) (mgCOPC/kgBW/day; equivalent to TDI)

ADDpot potential average daily dose diet or sediment (mgCOPC/kgBW/day; equivalent to TDI)

Ck Concentration in kth prey (mg/kg WW)*

NIRk Normalized ingestion rate of kth prey on WW basis (kgfood/kgBW/day)

Cs Concentration in sediment (mg/kg DW)

FS Fraction of sediment in diet (as percentage of diet on a DW basis)

IR_{total} Food ingestion rate (gDW/day). When using IR_{total} WW, conversion to DW IRs is necessary

BW Body weight (g)

IR_{total} = IR_{fish} + IR_{inverts}

$$IR_{fish} = NIR_{fish} \times BW \times CF_1$$

CF₁ DW/WW conversion factor; fraction solids

CF_{fish} - 0.18 DW/WW

$$IR_{inverts} = NIR_{inverts} \times BW \times CF_1$$

CF_{invert} - 0.21 DW/WW

$$NIR_k = P_k \times NIR_{total}$$

Pk Proportion of the diet fore kth food type on a WW basis

NIR_{total} Total normalized ingestion rate (g/gBW/day WW)

FMR Free metabolic rate (kcal/day/kg BW; average sized receptor)

MEavg Average metabolizable energy of the total diet (kcal/g WW)

Concentration in tissue

$$C_n = C_s \times BSAF$$

C_s Concentration in sediment (mg/kg DW)

BSAF Biota-sediment accumulation factor (WW/DW)

FMR	243.0336718	kcal/day/kg BW			
PD	1	unitless	NIRfish	0.420594759	kgWW/kgBW-d
AE _{fish}	0.62	unitless	NIRinverts	0.046732751	kgWW/kgBW-d
AE _{invert}	0.61	unitless	IRtotal	298.2717835	gDW/d
GE _{fish}	850	kcal/kg _{fish}	AUF	1	unitless
GE _{invert}	750	kcal/kg _{invertebrate}	BW	2300	g
FS	0.010		a	14.25	unitless
			b	0.659	unitless

Table C-7 Revised
Total Daily Intake and Hazard Quotient Worksheet for Double Crested Cormorant

Chemical	95UCL C _s (mg/kg _{dw})	95th percentile BSAF fish class 1,2,3	95th percentile BSAF invert class 1	TEF	95th percentile TDI (mg/kg _{bw} /day)	NOAEL (mg/kg _{bw} /day)	HQ NOAEL	COPC
Arsenic	78.3	0.220	0.253	--	8.272E+00	2.46	3.36	Yes
Cadmium	0.985	0.0779	2.24	--	1.367E-01	1.45	0.094	No
Chromium	207	0.0146	0.0318	--	1.847E+00	1.00	1.85	Yes
Copper	109	0.124	0.514	--	8.444E+00	47.0	0.180	No
Lead	158	0.0215	0.0216	--	1.793E+00	1.13	1.59	Yes
Mercury	81.9	0.540	2090	--	8.018E+03	0.00640	1252812	Yes
Nickel	52.8	0.0293	0.268	--	1.380E+00	77.4	0.0178	No
Selenium	1.20	1.06	1.34	--	6.117E-01	1.80	0.340	No
Zinc	721	0.363	0.218	--	1.184E+02	14.5	8.16	Yes
2-Methylnaphthalene	10.5	0.366	3.76	--	3.475E+00	1.11	3.13	Yes
Acenaphthene	7.96	0.358	3.45	--	2.492E+00	1.01	2.47	Yes
Acenaphthylene	8.59	0.394	3.18	--	2.711E+00	1.01	2.68	Yes
Anthracene	6.49	0.382	2.92	--	1.937E+00	1.11	1.74	Yes
Benzo(a)anthracene	2.75	0.480	2.47	--	8.762E-01	280	0.00313	No
Benzo(a)pyrene	2.59	0.562	2.06	--	8.649E-01	280	0.00309	No
Benzo(b)fluoranthene	2.33	0.491	2.69	--	7.771E-01	280	0.00278	No
Benzo(g,h,i)perylene	3.06	0.499	2.92	--	1.064E+00	280	0.00380	No
Benzo(k)fluoranthene	2.24	0.551	2.69	--	8.036E-01	280	0.00287	No
Chrysene	3.04	0.370	2.09	--	7.739E-01	280	0.00276	No
Dibenzo(a,h)anthracene	2.84	0.465	3.45	--	1.017E+00	280	0.00363	No
Fluoranthene	5.47	0.426	3.65	--	1.920E+00	280	0.00686	No
Fluorene	5.56	0.359	3.45	--	1.743E+00	1.01	1.73	Yes
Indeno(1,2,3-cd)pyrene	0.832	0.482	3.18	--	2.934E-01	280	0.00105	No
Naphthalene ^a	28.8	0.366	0.0301	--	4.511E+00	1.11	4.06	Yes
Phenanthrene	13.7	0.396	2.92	--	4.169E+00	1.13	3.69	Yes
Pyrene	11.2	0.386	3.73	--	3.785E+00	280	0.0135	No
Total HPAH 16	26.4	0.199	7.42	--	1.140E+01	280	0.0407	No
Total LPAH 16	137	0.325	5.84	--	5.629E+01	1.01	55.7	Yes
Total PAH 16	63.7	0.172	10.4	--	3.565E+01	281	0.127	No
Aroclor 1248	60.4	0.575	1.20	--	1.807E+01	0.410	44.1	Yes
Aroclor 1254	2.36	4.43	3.92	--	4.833E+00	0.180	26.8	Yes
Aroclor 1260	0.820	3.20	1.19	--	1.150E+00	8.33	0.138	No
Total PCB Aroclors	127	2.34	1.38	--	-	0.410	--	--
PCB-077 ^b	0.0350	1.74	0.681	0.0001	2.677E-06	see PCB congener TEQ		
PCB-081 ^b	0.00154	1.74	0.681	0.0003	3.534E-07	see PCB congener TEQ		
PCB-105	0.107	1.74	0.681	0.00003	2.456E-06	see PCB congener TEQ		
PCB-114	0.00687	1.29	0.156	0.00003	1.136E-07	see PCB congener TEQ		
PCB-118	0.122	6.00	0.729	0.00003	9.366E-06	see PCB congener TEQ		
PCB-123 ^c	0.0361	0.761	0.472	0.00003	3.719E-07	see PCB congener TEQ		
PCB-126	0.000726	0.761	0.472	0.1	2.493E-05	see PCB congener TEQ		
PCB-156	0.00970	1.69	0.132	0.00003	2.090E-07	see PCB congener TEQ		
PCB-157	0.00970	1.79	0.261	0.00003	2.230E-07	see PCB congener TEQ		
PCB-167	0.00294	1.54	0.406	0.00003	5.892E-08	see PCB congener TEQ		
PCB-169	0.000141	0.171	0.0408	0.03	3.178E-07	see PCB congener TEQ		
PCB-189	0.00106	0.698	0.0620	0.00003	9.469E-09	see PCB congener TEQ		
PCB congeners TEQ	NA	--	--	--	4.109E-05	0.0000140	3	Yes
1,2,3,4,6,7,8-HpCDD	0.000779	0.0134	0.813	0.01	3.500E-07	see Dioxin/furan congener TEQ		
1,2,3,4,6,7,8-HpCDF	0.00109	0.0429	0.599	0.01	5.159E-07	see Dioxin/furan congener TEQ		
1,2,3,4,7,8,9-HpCDF	0.000134	0.00863	0.890	0.01	6.234E-08	see Dioxin/furan congener TEQ		
1,2,3,4,7,8-HxCDD	0.0000138	0.0472	0.644	0.1	7.072E-08	see Dioxin/furan congener TEQ		
1,2,3,4,7,8-HxCDF	0.000392	0.121	0.410	0.1	2.797E-06	see Dioxin/furan congener TEQ		

Table C-7 Revised
Total Daily Intake and Hazard Quotient Worksheet for Double Crested Cormorant

Chemical	95UCL C _s (mg/kg _{dw})	95th percentile BSAF fish class 1,2,3	95th percentile BSAF invert class 1	TEF	95th percentile TDI (mg/kg _{bw} /day)	NOAEL (mg/kg _{bw} /day)	HQ NOAEL	COPC
1,2,3,6,7,8-HxCDD	0.0000443	0.0330	0.441	0.1	1.585E-07	see Dioxin/furan congener TEQ		
1,2,3,6,7,8-HxCDF	0.000120	0.372	0.665	0.1	2.266E-06	see Dioxin/furan congener TEQ		
1,2,3,7,8,9-HxCDD	0.0000256	0.0341	0.399	0.1	8.777E-08	see Dioxin/furan congener TEQ		
1,2,3,7,8,9-HxCDF	0.00000931	0.0673	0.463	0.1	4.770E-08	see Dioxin/furan congener TEQ		
1,2,3,7,8-PeCDD	0.00000548	0.277	0.668	1	8.166E-07	see Dioxin/furan congener TEQ		
1,2,3,7,8-PeCDF	0.000208	0.738	0.860	0.03	2.196E-06	see Dioxin/furan congener TEQ		
2,3,4,6,7,8-HxCDF	0.0000229	0.0256	1.26	0.1	1.625E-07	see Dioxin/furan congener TEQ		
2,3,4,7,8-PeCDF	0.0000803	0.898	0.781	0.3	1.001E-05	see Dioxin/furan congener TEQ		
2,3,7,8-TCDD	0.000398	0.853	2.07	1	1.818E-04	see Dioxin/furan congener TEQ		
2,3,7,8-TCDF	0.000329	0.503	1.92	0.1	9.955E-06	see Dioxin/furan congener TEQ		
OCDD	0.00868	0.0162	0.615	0.0003	9.596E-08	see Dioxin/furan congener TEQ		
OCDF	0.0379	0.00936	0.360	0.0003	2.508E-07	see Dioxin/furan congener TEQ		
Dioxin/furan congener TEQ	NA	--	--	--	2.116E-04	0.0000140	15	Yes
4,4'-DDD	0.0429	1.33	2.21	--	2.848E-02	0.00280	10.2	Yes
4,4'-DDE	0.188	2.84	8.78	--	3.019E-01	0.00280	108	Yes
4,4'-DDT	0.585	1.36	1.66	--	3.808E-01	0.00280	136	Yes
Aldrin	0.0500	2.29	1.39	--	5.147E-02	0.0770	0.668	No
Endrin	0.0140	1.33	1.28	--	8.687E-03	0.0100	0.869	No
alpha-Chlordane	0.0417	2.69	3.48	--	5.402E-02	2.14	0.0252	No
gamma-BHC (Lindane)	0.600	2.29	1.39	--	6.177E-01	2.00	0.309	No
Heptachlor Epoxide	0.0680	2.29	2.35	--	7.305E-02	0.280	0.261	No
Endosulfan I	0.0320	2.29	2.67	--	3.486E-02	10.00	0.00349	No
Endosulfan II	0.100	1.33	1.31	--	6.219E-02	10.00	0.00622	No
gamma-Chlordane	0.0864	2.58	1.89	--	1.015E-01	2.14	0.0474	No
Methoxychlor	0.120	0.579	3.25	--	4.760E-02	178	0.000267	No
Total Chlordane (alpha & gamma)	0.144	2.63	2.13	--	1.738E-01	2.14	0.0812	No
Total DDT	1.61	1.34	1.92	--	1.054E+00	0.00280	376	Yes
Hexachlorobenzene	55.0	0.314	4.23	--	1.821E+01	0.670	27.2	Yes
Hexachlorobutadiene	11.8	0.612	3.52	--	4.994E+00	4.00	1.25	Yes
Hexachloroethane	2.41	0.460	3.76	--	8.929E-01	1.00	0.893	No
1,2-Dichlorobenzene	0.0400	47.9	114	--	1.019E+00	16.1	0.0633	No
1,3-Dichlorobenzene	8.85	50.2	110	--	2.324E+02	16.1	14.4	Yes
1,4-Dichlorobenzene	1.05	49.2	126	--	2.791E+01	16.1	1.73	Yes
bis(2-ethylhexyl)phthalate*	6.94	0.00	0.00	--	9.000E-03	1.10	0.0082	No
1,1,1-Trichloroethane*	0.115	0.00	0.00	--	1.491E-04	NA	--	See note d
1,1,2,2-Tetrachloroethane*	0.115	0.00	0.00	--	1.491E-04	NA	--	See note d
Acrylonitrile*	0.500	0.00	0.00	--	6.484E-04	NA	--	See note d
Benzene*	0.252	0.000	0.000	--	3.268E-04	NA	--	See note d
Chlorobenzene*	0.169	0.000	0.000	--	2.192E-04	NA	--	See note d
Toluene*	0.141	0.000	0.000	--	1.829E-04	NA	--	See note d
Total xylene*	1.90	0.00	0.00	--	2.464E-03	NA	--	See note d

Notes:

* Non-bioaccumulative; evaluated for direct ingestion only

a - No BSAF values for Naphthalene available for Prey Group; Benzo(a)pyrene BSAF used as surrogate

b - No BSAF values for PCB-77 and PCB-81 available for Prey Group; PCB-105 BSAF used as surrogate

c - No BSAF values for PCB-123 available for Prey Group; PCB-126 BSAF used as surrogate

d - Not assessed due to lack of available effects data (i.e. TRV)

Table C-8 Revised
Total Daily Intake and Hazard Quotient Worksheet for Belted Kingfisher

Scenario: Hypothetical piscivorous bird receptor of concern - Belted Kingfisher

Exposure Assessment

Exposure Model	
Variables	
$ADD_{pot,diet} = (C_k \times NIR_k)_{fish}$	
ADDtotal potential average daily dose (diet and sediment) (mgCOPC/kgBW/day; equivalent to TDI)	
ADDpot potential average daily dose diet or sediment (mgCOPC/kgBW/day; equivalent to TDI)	
C _k Concentration in kth prey (mg/kg WW)*	
NIR _k Normalized ingestion rate of kth prey on WW basis (kgfood/kgBW/day)	
C _s Concentration in sediment (mg/kg DW)	
FS Fraction of sediment in diet (as percentage of diet on a DW basis)	
IR _{total} Food ingestion rate (gDW/day). When using IRtotal WW, conversion to DW IRs is necessary	
BW Body weight (g)	
IR _{total} = IR _{fish} + IR _{inverts}	
$IR_{fish} = NIR_{fish} \times BW \times CF_1$	CF ₁ DW/WW conversion factor; fraction solids CF _{fish} - 0.18 DW/WW
I	
$NIR_k = P_k \times NIR_{total}$	P _k Proportion of the diet fore kth food type on a WW basis
$NIR_{total} = \frac{FMR}{ME_{avg}}$	NIR _{total} Total normalized ingestion rate (g/gBW/day WW) FMR Free metabolic rate (kcal/day/kg BW; average sized receptor) ME _{avg} Average metabolizable energy of the total diet (kcal/g WW)
Concentration in tissue	
$C_n = C_s \times BSAF$	C _s Concentration in sediment (mg/kg DW) BSAF Biota-sediment accumulation factor (WW/DW)

FMR	637.4980675	kcal/day/kgBW	NIRfish	1.209673752	kgWW/kgBW-d
PD	1	unitless			
AE _{fish}	0.62	unitless			
GE _{fish}	850	kcal/kg _{fish}			
AUF	1	unitless			
BW	136	g			
a	14.25	unitless			
b	0.659	unitless			

Table C-8 Revised
Total Daily Intake and Hazard Quotient Worksheet for Belted Kingfisher

Chemical	95UCL C _s (mg/kg _{dw})	Geomean BSAF	95th percentile BSAF	TEF	Geomean TDI (mg/kg _{bw} /day)	95th percentile TDI (mg/kg _{bw} /day)	LOAEL (mg/kg _{bw} /day)	NOAEL (mg/kg _{bw} /day)	HQ LOAEL	HQ NOAEL	COPC
Arsenic	78.3	0.0655	0.144	--	6.204E+00	1.364E+01	7.38	2.46	0.84	5.54	Uncertain
Cadmium	0.985	0.0201	0.0716	--	2.395E-02	8.531E-02	20	1.45	0.00120	0.0588	No
Chromium	207	0.00589	0.0144	--	1.475E+00	3.606E+00	5	1	0.29497	3.61	Uncertain
Copper	109	0.0361	0.143	--	4.760E+00	1.886E+01	61.7	47	0.07715	0.401	No
Lead	158	0.00450	0.0227	--	8.601E-01	4.339E+00	11.3	1.13	0.07611	3.84	Uncertain
Mercury	81.9	0.133	0.408	--	1.318E+01	4.042E+01	0.064	0.0064	205.88458	6316	Yes
Nickel	52.8	0.00528	0.0236	--	3.372E-01	1.507E+00	107	77.4	0.00315	0.0195	No
Selenium	1.20	0.647	0.969	--	9.392E-01	1.407E+00	9	1.8	0.10435	0.781	No
Zinc	721	0.209	0.376	--	1.823E+02	3.279E+02	131	14.5	1.39148	22.6	Yes
2-Methylnaphthalene	10.5	0.0886	0.366	--	1.125E+00	4.649E+00	5.55	1.11	0.20277	4.19	Uncertain
Acenaphthene	7.96	0.0870	0.358	--	8.377E-01	3.447E+00	5.05	1.01	0.166	3.41	Uncertain
Acenaphthylene	8.59	0.0939	0.394	--	9.757E-01	4.094E+00	5.05	1.01	0.193	4.05	Uncertain
Anthracene	6.49	0.0924	0.382	--	7.254E-01	2.999E+00	5.55	1.11	0.131	2.70	Uncertain
Benzo(a)anthracene	2.75	0.0997	0.447	--	3.317E-01	1.487E+00	1400	280	0.000237	0.00531	No
Benzo(a)pyrene	2.59	0.0838	0.539	--	2.626E-01	1.689E+00	1400	280	0.000188	0.00603	No
Benzo(b)fluoranthene	2.33	0.0789	0.480	--	2.224E-01	1.353E+00	1400	280	0.000159	0.00483	No
Benzo(g,h,i)perylene	3.06	0.0796	0.498	--	2.946E-01	1.843E+00	1400	280	0.000210	0.00658	No
Benzo(k)fluoranthene	2.24	0.0813	0.524	--	2.203E-01	1.420E+00	1400	280	0.000157	0.00507	No
Chrysene	3.04	0.0932	0.370	--	3.427E-01	1.361E+00	1400	280	0.000245	0.00486	No
Dibenzo(a,h)anthracene	2.84	0.0768	0.447	--	2.638E-01	1.536E+00	1400	280	0.000188	0.00548	No
Fluoranthene	5.47	0.0875	0.409	--	5.790E-01	2.706E+00	1400	280	0.000414	0.00967	No
Fluorene	5.56	0.0873	0.359	--	5.872E-01	2.415E+00	5.05	1.01	0.116	2.39	Uncertain
Indeno(1,2,3-cd)pyrene	0.832	0.0783	0.472	--	7.880E-02	4.750E-01	1400	280	0.0000563	0.00170	No
Naphthalene ^a	28.8	0.0886	0.366	--	3.087E+00	1.275E+01	5.55	1.11	0.556	11.5	Uncertain
Phenanthrene	13.7	0.0983	0.396	--	1.629E+00	6.563E+00	5.65	1.13	0.288	5.81	Uncertain
Pyrene	11.2	0.0897	0.386	--	1.215E+00	5.230E+00	1400	280	0.000868	0.0187	No
Total HPAH 16	26.4	0.0477	0.199	--	1.523E+00	6.355E+00	1400	280	0.00109	0.0227	No
Total LPAH 16	137	0.0792	0.343	--	1.313E+01	5.684E+01	5.05	1.01	2.60	56.3	Yes
Total PAH 16	63.7	0.0398	0.254	--	3.067E+00	1.957E+01	1406	281	0.00218	0.0697	No
Aroclor 1248	60.4	0.111	0.486	--	8.110E+00	3.551E+01	2.05	0.41	3.96	86.6	Yes
Aroclor 1254	2.36	0.197	1.19	--	5.624E-01	3.397E+00	1.8	0.18	0.312	18.9	Uncertain
Aroclor 1260	0.820	0.199	0.983	--	1.974E-01	9.751E-01	41.65	8.33	0.00474	0.117	No
Total PCB Aroclors	127	0.148	0.788	--	--	--	2.05	0.41	--	--	Yes
PCB-077 ^b	0.0350	0.204	0.993	0.05	4.319E-04	2.102E-03					see PCB congener TEQ
PCB-081 ^b	0.00154	0.204	0.993	0.1	3.800E-05	1.850E-04					see PCB congener TEQ
PCB-105	0.107	0.204	0.993	0.0001	2.640E-06	1.285E-05					see PCB congener TEQ
PCB-114	0.00687	0.0862	0.988	0.0001	7.164E-08	8.211E-07					see PCB congener TEQ
PCB-118	0.122	0.901	6.81	0.00001	1.330E-06	1.005E-05					see PCB congener TEQ
PCB-123 ^c	0.0361	0.0769	0.446	0.00001	3.358E-08	1.948E-07					see PCB congener TEQ
PCB-126	0.000726	0.0769	0.446	0.1	6.754E-06	3.917E-05					see PCB congener TEQ
PCB-156	0.00970	0.176	0.735	0.0001	2.065E-07	8.624E-07					see PCB congener TEQ
PCB-157	0.00970	0.205	0.773	0.0001	2.405E-07	9.070E-07					see PCB congener TEQ
PCB-167	0.00294	0.193	0.621	0.00001	6.864E-09	2.209E-08					see PCB congener TEQ
PCB-169	0.000141	0.0886	0.170	0.001	1.511E-08	2.900E-08					see PCB congener TEQ
PCB-189	0.00106	0.103	0.510	0.00001	1.321E-09	6.539E-09					see PCB congener TEQ
PCB congener TEQ	NA	--	--	--	4.812E-04	2.352E-03	1.40E-04	1.40E-05	3.43683	168	Yes
1,2,3,4,6,7,8-HpCDD	0.000779	0.00160	0.0136	0.001	1.508E-09	1.282E-08					see Dioxin/furan congener TEQ
1,2,3,4,6,7,8-HpCDF	0.00109	0.00151	0.0255	0.01	1.991E-08	3.362E-07					see Dioxin/furan congener TEQ

Table C-8 Revised
Total Daily Intake and Hazard Quotient Worksheet for Belted Kingfisher

Chemical	95UCL C _s (mg/kg _{dw})	Geomean BSAF	95th percentile BSAF	TEF	Geomean TDI (mg/kg _{bw} /day)	95th percentile TDI (mg/kg _{bw} /day)	LOAEL (mg/kg _{bw} /day)	NOAEL (mg/kg _{bw} /day)	HQ LOAEL	HQ NOAEL	COPC
1,2,3,4,7,8,9-HxCDF	0.000134	0.000765	0.0122	0.01	1.240E-09	1.978E-08		see Dioxin/furan congener TEQ			
1,2,3,4,7,8-HxCDD	0.0000138	0.00685	0.0469	0.05	5.718E-09	3.915E-08		see Dioxin/furan congener TEQ			
1,2,3,4,7,8-HxCDF	0.000392	0.00330	0.133	0.1	1.565E-07	6.307E-06		see Dioxin/furan congener TEQ			
1,2,3,6,7,8-HxCDD	0.0000443	0.00696	0.0314	0.01	3.730E-09	1.683E-08		see Dioxin/furan congener TEQ			
1,2,3,6,7,8-HxCDF	0.000120	0.0204	0.528	0.1	2.961E-07	7.664E-06		see Dioxin/furan congener TEQ			
1,2,3,7,8,9-HxCDD	0.0000256	0.00704	0.0207	0.1	2.180E-08	6.410E-08		see Dioxin/furan congener TEQ			
1,2,3,7,8,9-HxCDF	0.00000931	0.00411	0.0864	0.1	4.629E-09	9.730E-08		see Dioxin/furan congener TEQ			
1,2,3,7,8-PeCDD	0.00000548	0.0347	0.315	1	2.300E-07	2.088E-06		see Dioxin/furan congener TEQ			
1,2,3,7,8-PeCDF	0.000208	0.0178	1.20	0.1	4.479E-07	3.019E-05		see Dioxin/furan congener TEQ			
2,3,4,6,7,8-HxCDF	0.0000229	0.00339	0.0238	0.1	9.391E-09	6.593E-08		see Dioxin/furan congener TEQ			
2,3,4,7,8-PeCDF	0.0000803	0.0431	1.36	1	4.187E-06	1.321E-04		see Dioxin/furan congener TEQ			
2,3,7,8-TCDD	0.000398	0.0574	1.79	1	2.764E-05	8.618E-04		see Dioxin/furan congener TEQ			
2,3,7,8-TCDF	0.000329	0.0615	0.466	1	2.448E-05	1.855E-04		see Dioxin/furan congener TEQ			
OCDD	0.00868	0.00124	0.0163	0.0001	1.302E-09	1.711E-08		see Dioxin/furan congener TEQ			
OCDF	0.0379	0.000606	0.0141	0.0001	2.778E-09	6.464E-08		see Dioxin/furan congener TEQ			
Dioxin/furan congener TEQ	NA	--	--	--	5.750E-05	1.226E-03	1.40E-04	1.40E-05	0.411	87.6	Uncertain
4,4'-DDD	0.0429	0.489	1.33	--	2.538E-02	6.902E-02	0.028	0.0028	0.906	24.7	Uncertain
4,4'-DDE	0.188	0.618	1.70	--	1.405E-01	3.866E-01	0.028	0.0028	5.02	138	Yes
4,4'-DDT	0.585	0.674	1.33	--	4.770E-01	9.412E-01	0.028	0.0028	17.0	336	Yes
Aldrin	0.0500	0.658	2.29	--	3.980E-02	1.385E-01	0.385	0.077	0.103	1.80	Uncertain
Endrin	0.0140	0.527	1.33	--	8.925E-03	2.252E-02	0.1	0.01	0.0892	2.25	Uncertain
alpha-Chlordane	0.0417	0.769	2.69	--	3.879E-02	1.357E-01	10.7	2.14	0.00363	0.0634	No
gamma-BHC (Lindane)	0.600	0.990	2.29	--	7.185E-01	1.662E+00	20	2	0.0359	0.831	No
Heptachlor Epoxide	0.0680	0.766	2.29	--	6.301E-02	1.884E-01	2.8	0.28	0.0225	0.673	No
Endosulfan I	0.0320	0.733	2.29	--	2.837E-02	8.864E-02	50	10	0.000567	0.00886	No
Endosulfan II	0.100	0.598	1.33	--	7.234E-02	1.609E-01	50	10	0.00145	0.0161	No
gamma-Chlordane	0.0864	0.724	2.58	--	7.567E-02	2.697E-01	10.7	2.14	0.00707	0.126	No
Methoxychlor	0.120	0.190	0.311	--	2.758E-02	4.515E-02	1775	178	0.0000155	0.000254	No
Total Chlordane (alpha & gamma)	0.144	0.732	2.63	--	1.275E-01	4.581E-01	10.7	2.14	0.0119	0.214	No
Total DDT	1.61	0.479	1.34	--	9.329E-01	2.610E+00	0.028	0.0028	33.3	932	Yes
Hexachlorobenzene	55.0	0.0833	0.314	--	5.542E+00	2.089E+01	3.35	0.67	1.65	31.2	Yes
Hexachlorobutadiene	11.8	0.0979	0.448	--	1.397E+00	6.395E+00	20	4	0.0699	1.60	Uncertain
Hexachloroethane	2.41	0.0982	0.460	--	2.863E-01	1.341E+00	5	1	0.0573	1.34	Uncertain
1,2-Dichlorobenzene	0.0400	59.7	59.7	--	2.889E+00	2.889E+00	160.8	16.08	0.0180	0.180	No
1,3-Dichlorobenzene	8.85	62.7	62.7	--	6.712E+02	6.712E+02	160.8	16.08	4.17	41.7	Yes
1,4-Dichlorobenzene	1.05	61.2	61.2	--	7.773E+01	7.773E+01	160.8	16.08	0.483	4.83	Uncertain
bis(2-ethylhexyl)phthalate*	6.94	0	0.00	--	0.000E+00	0.000E+00	5.5	1.1	0.00	0.00	No
1,1,1-Trichloroethane*	0.115	0	0.00	--	0.000E+00	0.000E+00	NA	NA	--	0.00	See note c
1,1,2,2-Tetrachloroethane*	0.115	0	0.00	--	0.000E+00	0.000E+00	NA	NA	--	0.00	See note c
Acrylonitrile*	0.500	0	0.00	--	0.000E+00	0.000E+00	NA	NA	--	0.00	See note c
Benzene*	0.252	0	0.000	--	0.000E+00	0.000E+00	NA	NA	--	0.00	See note c
Chlorobenzene*	0.169	0	0.000	--	0.000E+00	0.000E+00	NA	NA	--	0.00	See note c
Toluene*	0.141	0	0.000	--	0.000E+00	0.000E+00	NA	NA	--	0.00	See note c
Total xylene*	1.90	0	0.00	--	0.000E+00	0.000E+00	NA	NA	--	0.00	See note c

Notes:

*Non-bioaccumulative; evaluated for direct ingestion only

a - No BSAF values for Naphthalene available for Prey Group; Benzo(a)pyrene BSAF used as surrogate

b - No BSAF values for PCB-77 and PCB-81 available for Prey Group; PCB-105 BSAF used as surrogate

c - Not assessed due to lack of available effects data (i.e. TRV)

Table C-9 Revised
Total Daily Intake and Hazard Quotient Worksheet for Spotted Sandpiper

Scenario: Hypothetical sediment-probing bird receptor of concern - Spotted Sandpiper

Exposure Assessment

Exposure Model

$$ADD_{total} = ADD_{pot,diet} + ADD_{pot,se din ent}$$

$$ADD_{pot,diet} = (C_k \times NIR_k)_{inverts}$$

$$ADD_{pot,sed} = (C_s \times FS \times IR_{total}) / BW$$

Variables

ADDtotal potential average daily dose (diet and sediment) (mgCOPC/kgBW/day; equivalent to TDI)

ADDpot potential average daily dose diet or sediment (mgCOPC/kgBW/day; equivalent to TDI)

Ck Concentration in kth prey (mg/kg WW)*

NIRk Normalized ingestion rate of kth prey on WW basis (kgfood/kgBW/day)

Cs Concentration in sediment (mg/kg DW)

FS Fraction of sediment in diet (as percentage of diet on a DW basis)

IR_{total} Food ingestion rate (gDW/day). When using IR_{total} WW, conversion to DW IRs is necessary

BW Body weight (g)

IR_{total} = IR_{fish} + IR_{inverts}

CF₁ DW/WW conversion factor; fraction solids

$$IR_{inverts} = NIR_{inverts} \times BW \times CF_1$$

CF_{invert} - 0.21 DW/WW

$$NIR_k = P_k \times NIR_{total}$$

Pk Proportion of the diet fore kth food type on a WW basis

NIR_{total} Total normalized ingestion rate (g/gBW/day WW)

FMR Free metabolic rate (kcal/day/kg BW; average sized receptor)

MEavg Average metabolizable energy of the total diet (kcal/g WW)

Concentration in tissue

$$C_n = C_s \times BSAF$$

C_s Concentration in sediment (mg/kg DW)

BSAF Biota-sediment accumulation factor (WW/DW)

FMR	819.9018525	kcal/day/kgBW
PD	1	unitless
AE _{invertebrates}	0.61	unitless
GE _{invertebrates}	750	kcal/kg _{invertebrate}
FS	0.3	
AUF	1	unitless
BW	42.5	g
a	8.13	unitless
b	0.77	unitless

NIR _{inverts}	1.792135197	kgWW/kgBW-d
IR _{total}	15.99480663	gDW/d

Table C-9 Revised
Total Daily Intake and Hazard Quotient Worksheet for Spotted Sandpiper

Chemical	95UCL C _s (mg/kg _{dw})	Geomean BSAF	95th percentile BSAF	TEF	Geomean TDI (mg/kg _{bw/day})	95th percentile TDI (mg/kg _{bw/day})	LOAEL (mg/kg _{bw/day})	NOAEL (mg/kg _{bw/day})	HQ LOAEL	HQ NOAEL	COPC
Arsenic	78.3	0.149	0.253	--	2.975E+01	4.434E+01	7.38	2.46	4.0	18.0	Yes
Cadmium	0.985	0.331	2.24	--	6.955E-01	4.065E+00	20	1.45	0.0348	2.80	Uncertain
Chromium	207	0.00646	0.0318	--	2.577E+01	3.517E+01	5	1	5.2	35.2	Yes
Copper	109	0.0420	0.514	--	2.051E+01	1.127E+02	61.7	47	0.332	2.40	Uncertain
Lead	158	0.00472	0.0216	--	1.918E+01	2.396E+01	11.3	1.13	1.70	21.2	Yes
Mercury	81.9	2.03	2090	--	3.072E+02	3.068E+05	0.064	0.0064	4800	47932941	Yes
Nickel	52.8	0.0444	0.268	--	1.016E+01	3.132E+01	107	77.4	0.095	0.405	No
Selenium	1.20	0.594	1.34	--	1.413E+00	3.017E+00	9	1.80	0.157	1.68	Uncertain
Zinc	721	0.0506	0.218	--	1.468E+02	3.631E+02	131	14.50	1.12	25.0	Yes
2-Methylnaphthalene	10.5	0.0359	3.76	--	1.861E+00	7.194E+01	5.55	1.11	0.335	64.8	Uncertain
Acenaphthene	7.96	0.143	3.45	--	2.939E+00	5.011E+01	5.05	1.01	0.582	49.6	Uncertain
Acenaphthylene	8.59	0.0202	3.18	--	1.281E+00	4.992E+01	5.05	1.01	0.254	49.4	Uncertain
Anthracene	6.49	0.0154	2.92	--	9.119E-01	3.470E+01	5.55	1.11	0.164	31.3	Uncertain
Benzo(a)anthracene	2.75	0.0227	2.47	--	4.224E-01	1.248E+01	1400	280	0.000302	0.0446	No
Benzo(a)pyrene	2.59	0.0424	2.06	--	4.892E-01	9.854E+00	1400	280	0.000349	0.0352	No
Benzo(b)fluoranthene	2.33	0.0148	2.69	--	3.249E-01	1.150E+01	1400	280	0.000232	0.0411	No
Benzo(g,h,i)perylene	3.06	0.0132	2.92	--	4.179E-01	1.636E+01	1400	280	0.000298	0.0584	No
Benzo(k)fluoranthene	2.24	0.00817	2.69	--	2.857E-01	1.105E+01	1400	280	0.000204	0.0395	No
Chrysene	3.04	0.0259	2.09	--	4.843E-01	1.173E+01	1400	280	0.000346	0.0419	No
Dibenzo(a,h)anthracene	2.84	0.0109	3.45	--	3.761E-01	1.788E+01	1400	280	0.000269	0.0639	No
Fluoranthene	5.47	0.0586	3.65	--	1.192E+00	3.640E+01	1400	280	0.00085	0.130	No
Fluorene	5.56	0.0269	3.45	--	8.958E-01	3.500E+01	5.05	1.01	0.177	34.7	Uncertain
Indeno(1,2,3-cd)pyrene	0.832	0.00856	3.18	--	1.067E-01	4.835E+00	1400	280	0.000076	0.0173	No
Naphthalene	28.8	0.0143	0.0301	--	3.990E+00	4.805E+00	5.55	1.11	0.72	4.3	Uncertain
Phenanthrene	13.7	0.0622	2.92	--	3.074E+00	7.324E+01	5.65	1.13	0.54	64.8	Uncertain
Pyrene	11.2	0.0556	3.73	--	2.381E+00	7.613E+01	1400	280	0.00170	0.272	No
Total HPAH 16	26.4	0.581	7.42	--	3.047E+01	3.540E+02	1400	280	0.0218	1.26	Uncertain
Total LPAH 16	137	1.07	5.84	--	2.782E+02	1.449E+03	5.05	1.01	55.1	1435	Yes
Total PAH 16	63.7	0.747	10.4	--	9.247E+01	1.194E+03	1406	281	0.0658	4.25	Uncertain
Aroclor 1248	60.4	0.546	1.20	--	6.592E+01	1.367E+02	2.05	0.41	32.2	333	Yes
Aroclor 1254	2.36	0.468	3.92	--	2.246E+00	1.685E+01	1.8	0.18	1.25	93.6	Yes
Aroclor 1260	0.820	0.410	1.19	--	6.951E-01	1.841E+00	41.65	8.33	0.0167	0.221	No
Total PCB Aroclors	127	0.500	1.38	--	--	--	2.05	0.41	--	--	--
PCB-077 ^b	0.0350	0.194	0.681	0.05	8.060E-04	2.333E-03					see PCB congener TEQ
PCB-081 ^b	0.00154	0.194	0.681	0.1	7.093E-05	2.053E-04					see PCB congener TEQ
PCB-105	0.107	0.194	0.681	0.0001	4.928E-06	1.427E-05					see PCB congener TEQ
PCB-114	0.00687	0.0445	0.156	0.0001	1.324E-07	2.696E-07					see PCB congener TEQ
PCB-118	0.122	0.145	0.729	0.00001	4.548E-07	1.732E-06					see PCB congener TEQ
PCB-123	0.0361	0.265	8.73	0.00001	2.122E-07	5.689E-06					see PCB congener TEQ
PCB-126	0.000726	0.103	0.472	0.1	2.160E-05	6.961E-05					see PCB congener TEQ
PCB-156	0.00970	0.132	0.132	0.0001	3.390E-07	3.390E-07					see PCB congener TEQ
PCB-157	0.00970	0.261	0.261	0.0001	5.632E-07	5.632E-07					see PCB congener TEQ
PCB-167	0.00294	0.103	0.406	0.00001	8.746E-09	2.471E-08					see PCB congener TEQ
PCB-169	0.000141	0.0106	0.0408	0.001	1.860E-08	2.623E-08					see PCB congener TEQ
PCB-189	0.00106	0.0202	0.0620	0.00001	1.581E-09	2.375E-09					see PCB congener TEQ
PCB congener TEQ	NA	--	--	--	9.052E-04	2.631E-03	1.40E-04	1.40E-05	6.4657	187.9	Yes
1,2,3,4,6,7,8-HpCDD	0.000779	0.101	0.813	0.001	2.290E-07	1.223E-06					see Dioxin/furan congener TEQ
1,2,3,4,6,7,8-HpCDF	0.00109	0.0668	0.599	0.01	2.536E-06	1.293E-05					see Dioxin/furan congener TEQ
1,2,3,4,7,8,9-HpCDF	0.000134	0.0490	0.890	0.01	2.690E-07	2.289E-06					see Dioxin/furan congener TEQ
1,2,3,4,7,8-HxCDD	0.0000138	0.0828	0.644	0.05	1.803E-07	8.743E-07					see Dioxin/furan congener TEQ
1,2,3,4,7,8-HxCDF	0.000392	0.0525	0.410	0.1	8.114E-06	3.323E-05					see Dioxin/furan congener TEQ

Table C-9 Revised
Total Daily Intake and Hazard Quotient Worksheet for Spotted Sandpiper

Chemical	95UCL C _s (mg/kg _{dw})	Geomean BSAF	95th percentile BSAF	TEF	Geomean TDI (mg/kg _{bw/day})	95th percentile TDI (mg/kg _{bw/day})	LOAEL (mg/kg _{bw/day})	NOAEL (mg/kg _{bw/day})	HQ LOAEL	HQ NOAEL	COPC
1,2,3,6,7,8-HxCDD	0.0000443	0.125	0.441	0.01	1.493E-07	4.001E-07		see Dioxin/furan congener TEQ			
1,2,3,6,7,8-HxCDF	0.000120	0.0797	0.665	0.1	3.069E-06	1.566E-05		see Dioxin/furan congener TEQ			
1,2,3,7,8,9-HxCDD	0.0000256	0.0974	0.399	0.1	7.359E-07	2.120E-06		see Dioxin/furan congener TEQ			
1,2,3,7,8,9-HxCDF	0.00000931	0.0418	0.463	0.1	1.749E-07	8.776E-07		see Dioxin/furan congener TEQ			
1,2,3,7,8-PeCDD	0.00000548	0.129	0.668	1	1.886E-06	7.179E-06		see Dioxin/furan congener TEQ			
1,2,3,7,8-PeCDF	0.000208	0.126	0.860	0.1	7.045E-06	3.441E-05		see Dioxin/furan congener TEQ			
2,3,4,6,7,8-HxCDF	0.0000229	0.111	1.26	0.1	7.141E-07	5.430E-06		see Dioxin/furan congener TEQ			
2,3,4,7,8-PeCDF	0.0000803	0.107	0.781	1	2.446E-05	1.215E-04		see Dioxin/furan congener TEQ			
2,3,7,8-TCDD	0.000398	0.215	2.07	1	1.983E-04	1.521E-03		see Dioxin/furan congener TEQ			
2,3,7,8-TCDF	0.000329	0.268	1.92	1	1.952E-04	1.169E-03		see Dioxin/furan congener TEQ			
OCDD	0.00868	0.0678	0.615	0.0001	2.035E-07	1.055E-06		see Dioxin/furan congener TEQ			
OCDF	0.0379	0.0450	0.360	0.0001	7.336E-07	2.873E-06		see Dioxin/furan congener TEQ			
Dioxin/furan congener TEQ	NA	--	--	--	4.440E-04	2.933E-03	1.40E-04	1.40E-05	3.1711	209.5	Yes
4,4'-DDD	0.0429	0.498	2.21	--	4.313E-02	1.748E-01	0.028	0.0028	1.5404	62.4	Yes
4,4'-DDE	0.188	0.602	8.78	--	2.241E-01	2.979E+00	0.028	0.0028	8.0019	1064.1	Yes
4,4'-DDT	0.585	0.385	1.66	--	4.697E-01	1.806E+00	0.028	0.0028	16.7744	645.1	Yes
Aldrin	0.0500	0.249	1.39	--	2.796E-02	1.302E-01	0.385	0.077	0.0726	1.7	Uncertain
Endrin	0.0140	0.289	1.28	--	8.832E-03	3.370E-02	0.1	0.01	0.0883	3.4	Uncertain
alpha-Chlordane	0.0417	0.569	3.48	--	4.723E-02	2.648E-01	10.7	2.14	0.0044	0.1	No
gamma-BHC (Lindane)	0.600	0.364	1.39	--	4.591E-01	1.562E+00	20	2	0.0230	0.8	No
Heptachlor Epoxide	0.0680	0.444	2.35	--	6.179E-02	2.941E-01	2.8	0.28	0.0221	1.1	Uncertain
Endosulfan I	0.0320	0.589	2.67	--	3.739E-02	1.567E-01	50	10	0.0007	0.0	No
Endosulfan II	0.100	0.322	1.31	--	6.900E-02	2.461E-01	50	10	0.0014	0.0	No
gamma-Chlordane	0.0864	0.120	1.89	--	2.834E-02	3.024E-01	10.7	2.14	0.0026	0.1	No
Methoxychlor	0.120	0.647	3.25	--	1.527E-01	7.125E-01	1775	177.5	0.0001	0.0	No
Total Chlordane (alpha & gamma)	0.144	0.405	2.13	--	1.208E-01	5.659E-01	10.7	2.14	0.0113	0.3	No
Total DDT	1.61	0.395	1.92	--	1.321E+00	5.722E+00	0.028	0.0028	47.1959	2043.4	Yes
Hexachlorobenzene	55.0	0.501	4.23	--	5.559E+01	4.232E+02	3.35	0.67	16.5946	631.6	Yes
Hexachlorobutadiene	11.8	0.861	3.52	--	1.954E+01	7.577E+01	20	4	0.9770	18.9	Uncertain
Hexachloroethane	2.41	0.928	3.76	--	4.280E+00	1.651E+01	5	1	0.8560	16.5	Uncertain
1,2-Dichlorobenzene	0.0400	38.7	114	--	2.779E+00	8.177E+00	160.8	16.08	0.0173	0.5	No
1,3-Dichlorobenzene	8.85	45.4	110	--	7.211E+02	1.746E+03	160.8	16.08	4.4842	108.6	Yes
1,4-Dichlorobenzene	1.05	54.4	126	--	1.025E+02	2.372E+02	160.8	16.08	0.6373	14.8	Uncertain
bis(2-ethylhexyl)phthalate*	6.94	0.00	0.00	--	7.836E-01	7.836E-01	5.5	1.1	0.1425	0.7	No
1,1,1-Trichloroethane*	0.115	0.00	0.00	--	1.298E-02	1.298E-02	NA	NA	--	--	See note a
1,1,2,2-Tetrachloroethane*	0.115	0.00	0.00	--	1.298E-02	1.298E-02	NA	NA	--	--	See note a
Acrylonitrile*	0.500	0.00	0.00	--	5.645E-02	5.645E-02	NA	NA	--	--	See note a
Benzene*	0.252	0.000	0.000	--	2.845E-02	2.845E-02	NA	NA	--	--	See note a
Chlorobenzene*	0.169	0.000	0.000	--	1.908E-02	1.908E-02	NA	NA	--	--	See note a
Toluene*	0.141	0.000	0.000	--	1.592E-02	1.592E-02	NA	NA	--	--	See note a
Total xylene*	1.90	0.00	0.00	--	2.145E-01	2.145E-01	NA	NA	--	--	See note a

Notes:

*Non-bioaccumulative; evaluated for direct ingestion only

a - Not assessed due to lack of available effects data (i.e. TRV)

b - No BSAF values for PCB-77 and PCB-81 available for Prey Group; PCB-105 BSAF used as surrogate

Table C-10 Revised
Total Daily Intake and Hazard Quotient Worksheet for Great Blue Heron

Scenario: Hypothetical carnivorous bird receptor of concern - Great Blue Heron

Exposure Assessment

Exposure Model	
Variables	
$ADD_{pot,diet} = (C_k \times NIR_k)_{fish}$	
ADDtotal potential average daily dose (diet and sediment) (mgCOPC/kgBW/day; equivalent to TDI)	
ADDpot potential average daily dose diet or sediment (mgCOPC/kgBW/day; equivalent to TDI)	
C _k Concentration in kth prey (mg/kg WW)*	
NIR _k Normalized ingestion rate of kth prey on WW basis (kgfood/kgBW/day)	
C _s Concentration in sediment (mg/kg DW)	
FS Fraction of sediment in diet (as percentage of diet on a DW basis)	
IR _{total} Food ingestion rate (gDW/day). When using IRtotal WW, conversion to DW IRs is necessary	
BW Body weight (g)	
IRtotal = IRfish + IRinverts	
$IR_{fish} = NIR_{fish} \times BW \times CF_1$	CF ₁ DW/WW conversion factor; fraction solids CF _{fish} - 0.18 DW/WW
$NIR_k = P_k \times NIR_{total}$	P _k Proportion of the diet fore kth food type on a WW basis
$NIR_{total} = \frac{FMR}{ME_{avg}}$	NIRtotal Total normalized ingestion rate (g/gBW/day WW) FMR Free metabolic rate (kcal/day/kg BW; average sized receptor) MEavg Average metabolizable energy of the total diet (kcal/g WW)
Concentration in tissue	
$C_n = C_s \times BSAF$	C _s Concentration in sediment (mg/kg DW) BSAF Biota-sediment accumulation factor (WW/DW)

FMR	245.6462321	kcal/day/kgBW	NIRfish	0.473763225	kgWW/kgBW-d
PD	1	unitless			
AE _{fish}	0.61	unitless			
GE _{fish}	850	kcal/kg _{fish}			
AUF	1	unitless			
BW	2229	g			
a	14.25	unitless			
b	0.659	unitless			

Table C-10 Revised
Total Daily Intake and Hazard Quotient Worksheet for Great Blue Heron

Chemical	95UCL C _s (mg/kg _{dw})	Geomean BSAF	95th percentile BSAF	TEF	Geomean TDI (mg/kg _{bw/day})	95th percentile TDI (mg/kg _{bw/day})	LOAEL (mg/kg _{bw/day})	NOAEL (mg/kg _{bw/day})	HQ LOAEL	HQ NOAEL	COPC
Arsenic	78.3	0.0655	0.144	--	2.430E+00	5.342E+00	7.38	2.46	0.33	2.17	Uncertain
Cadmium	0.985	0.0201	0.0716	--	9.380E-03	3.341E-02	20.0	1.45	0.000469	0.0230	No
Chromium	207	0.00589	0.0144	--	5.776E-01	1.412E+00	5.00	1	0.116	1.41	Uncertain
Copper	109	0.0361	0.143	--	1.864E+00	7.385E+00	61.7	47	0.0302	0.157	No
Lead	158	0.00450	0.0227	--	3.368E-01	1.699E+00	11.3	1.13	0.0298	1.50	Uncertain
Mercury	81.9	0.133	0.408	--	5.161E+00	1.583E+01	0.0640	0.0064	80.6	2474	Yes
Nickel	52.8	0.00528	0.0236	--	1.321E-01	5.903E-01	107	77.4	0.00123	0.00763	No
Selenium	1.20	0.647	0.969	--	3.678E-01	5.509E-01	9.00	1.80	0.0409	0.306	No
Zinc	721	0.209	0.376	--	7.139E+01	1.284E+02	131	14.5	0.545	8.86	Uncertain
2-Methylnaphthalene	10.5	0.0886	0.366	--	4.407E-01	1.821E+00	5.55	1.11	0.0794	1.64	Uncertain
Acenaphthene	7.96	0.0870	0.358	--	3.281E-01	1.350E+00	5.05	1.01	0.0650	1.34	Uncertain
Acenaphthylene	8.59	0.0939	0.394	--	3.821E-01	1.603E+00	5.05	1.01	0.0757	1.59	Uncertain
Anthracene	6.49	0.0924	0.382	--	2.841E-01	1.175E+00	5.55	1.11	0.0512	1.06	Uncertain
Benzo(a)anthracene	2.75	0.0997	0.447	--	1.299E-01	5.824E-01	1400	280	0.0000928	0.00208	No
Benzo(a)pyrene	2.59	0.0838	0.539	--	1.028E-01	6.614E-01	1400	280	0.0000734	0.00236	No
Benzo(b)fluoranthene	2.33	0.0789	0.480	--	8.710E-02	5.299E-01	1400	280	0.0000622	0.00189	No
Benzo(g,h,i)perylene	3.06	0.0796	0.498	--	1.154E-01	7.220E-01	1400	280	0.0000824	0.00258	No
Benzo(k)fluoranthene	2.24	0.0813	0.524	--	8.628E-02	5.561E-01	1400	280	0.0000616	0.00199	No
Chrysene	3.04	0.0932	0.370	--	1.342E-01	5.329E-01	1400	280	0.0000959	0.00190	No
Dibenzo(a,h)anthracene	2.84	0.0768	0.447	--	1.033E-01	6.014E-01	1400	280	0.0000738	0.00215	No
Fluoranthene	5.47	0.0875	0.409	--	2.268E-01	1.060E+00	1400	280	0.000162	0.00379	No
Fluorene	5.56	0.0873	0.359	--	2.300E-01	9.457E-01	5.05	1.01	0.0455	0.936	No
Indeno(1,2,3-cd)pyrene	0.832	0.0783	0.472	--	3.086E-02	1.860E-01	1400	280	0.0000220	0.000664	No
Naphthalene ^a	28.8	0.0886	0.366	--	1.209E+00	4.994E+00	5.55	1.11	0.218	4.50	Uncertain
Phenanthrene	13.7	0.0983	0.396	--	6.380E-01	2.570E+00	5.65	1.13	0.113	2.27	Uncertain
Pyrene	11.2	0.0897	0.386	--	4.760E-01	2.048E+00	1400	280	0.000340	0.00731	No
Total HPAH 16	26.4	0.0477	0.199	--	5.966E-01	2.489E+00	1400	280	0.000426	0.00889	No
Total LPAH 16	137	0.0792	0.343	--	5.141E+00	2.226E+01	5.05	1.01	1.02	22.0	Yes
Total PAH 16	63.7	0.0398	0.254	--	1.201E+00	7.665E+00	1410	281	0.000852	0.0273	No
Aroclor 1248	60.4	0.111	0.486	--	3.176E+00	1.391E+01	2.05	0.410	1.55	33.9	Yes
Aroclor 1254	2.36	0.197	1.19	--	2.203E-01	1.331E+00	1.80	0.180	0.122	7.39	Uncertain
Aroclor 1260	0.820	0.199	0.983	--	7.731E-02	3.819E-01	41.7	8.33	0.00185	0.0458	No
Total PCB Aroclors	127	0.148	0.788	--	--	--	2.05	0.410	--	--	--
PCB-077 ^b	0.0350	0.204	0.993	0.05	1.691E-04	8.233E-04	see PCB congener TEQ				
PCB-081 ^b	0.00154	0.204	0.993	0.1	1.488E-05	7.245E-05	see PCB congener TEQ				
PCB-105	0.107	0.204	0.993	0.0001	1.034E-06	5.034E-06	see PCB congener TEQ				
PCB-114	0.00687	0.0862	0.988	0.0001	2.806E-08	3.216E-07	see PCB congener TEQ				
PCB-118	0.122	0.901	6.81	0.00001	5.208E-07	3.936E-06	see PCB congener TEQ				
PCB-123 ^c	0.0361	0.0769	0.446	0.00001	1.315E-08	7.628E-08	see PCB congener TEQ				
PCB-126	0.000726	0.0769	0.446	0.1	2.645E-06	1.534E-05	see PCB congener TEQ				
PCB-156	0.00970	0.176	0.735	0.0001	8.088E-08	3.378E-07	see PCB congener TEQ				
PCB-157	0.00970	0.205	0.773	0.0001	9.421E-08	3.552E-07	see PCB congener TEQ				
PCB-167	0.00294	0.193	0.621	0.00001	2.688E-09	8.650E-09	see PCB congener TEQ				
PCB-169	0.000141	0.0886	0.170	0.001	5.919E-09	1.136E-08	see PCB congener TEQ				
PCB-189	0.00106	0.103	0.510	0.00001	5.173E-10	2.561E-09	see PCB congener TEQ				
PCB congener TEQ	NA	--	--	--	1.884E-04	9.212E-04	0.000140	0.0000140	1.346	65.8	Yes
1,2,3,4,6,7,8-HpCDD	0.000779	0.00160	0.0136	0.001	5.905E-10	5.019E-09	see Dioxin/furan congener TEQ				
1,2,3,4,6,7,8-HpCDF	0.00109	0.00151	0.0255	0.01	7.798E-09	1.317E-07	see Dioxin/furan congener TEQ				
1,2,3,4,7,8,9-HpCDF	0.000134	0.000765	0.0122	0.01	4.857E-10	7.745E-09	see Dioxin/furan congener TEQ				
1,2,3,4,7,8-HxCDD	0.0000138	0.00685	0.0469	0.05	2.239E-09	1.533E-08	see Dioxin/furan congener TEQ				
1,2,3,4,7,8-HxCDF	0.000392	0.00330	0.133	0.1	6.129E-08	2.470E-06	see Dioxin/furan congener TEQ				

Table C-10 Revised
Total Daily Intake and Hazard Quotient Worksheet for Great Blue Heron

Chemical	95UCL C _s (mg/kg _{dw})	Geomean BSAF	95th percentile BSAF	TEF	Geomean TDI (mg/kg _{bw} /day)	95th percentile TDI (mg/kg _{bw} /day)	LOAEL (mg/kg _{bw} /day)	NOAEL (mg/kg _{bw} /day)	HQ LOAEL	HQ NOAEL	COPC
1,2,3,6,7,8-HxCDD	0.0000443	0.00696	0.0314	0.01	1.461E-09	6.590E-09		see Dioxin/furan congener TEQ			
1,2,3,6,7,8-HxCDF	0.000120	0.0204	0.528	0.1	1.160E-07	3.002E-06		see Dioxin/furan congener TEQ			
1,2,3,7,8,9-HxCDD	0.0000256	0.00704	0.0207	0.1	8.538E-09	2.511E-08		see Dioxin/furan congener TEQ			
1,2,3,7,8,9-HxCDF	0.00000931	0.00411	0.0864	0.1	1.813E-09	3.811E-08		see Dioxin/furan congener TEQ			
1,2,3,7,8-PeCDD	0.00000548	0.0347	0.315	1	9.009E-08	8.178E-07		see Dioxin/furan congener TEQ			
1,2,3,7,8-PeCDF	0.000208	0.0178	1.20	0.1	1.754E-07	1.183E-05		see Dioxin/furan congener TEQ			
2,3,4,6,7,8-HxCDF	0.0000229	0.00339	0.0238	0.1	3.678E-09	2.582E-08		see Dioxin/furan congener TEQ			
2,3,4,7,8-PeCDF	0.0000803	0.0431	1.36	1	1.640E-06	5.174E-05		see Dioxin/furan congener TEQ			
2,3,7,8-TCDD	0.000398	0.0574	1.79	1	1.082E-05	3.375E-04		see Dioxin/furan congener TEQ			
2,3,7,8-TCDF	0.000329	0.0615	0.466	1	9.586E-06	7.263E-05		see Dioxin/furan congener TEQ			
OCDD	0.00868	0.00124	0.0163	0.0001	5.099E-10	6.703E-09		see Dioxin/furan congener TEQ			
OCDF	0.0379	0.000606	0.0141	0.0001	1.088E-09	2.532E-08		see Dioxin/furan congener TEQ			
Dioxin/furan congener TEQ	NA	--	--	--	2.252E-05	4.803E-04	0.000140	0.0000140	0.161	34.3	Uncertain
4,4'-DDD	0.0429	0.489	1.33	--	9.939E-03	2.703E-02	0.0280	0.00280	0.355	9.65	Uncertain
4,4'-DDE	0.188	0.618	1.70	--	5.504E-02	1.514E-01	0.0280	0.00280	1.97	54.1	Yes
4,4'-DDT	0.585	0.674	1.33	--	1.868E-01	3.686E-01	0.0280	0.00280	6.67	132	Yes
Aldrin	0.0500	0.658	2.29	--	1.559E-02	5.425E-02	0.385	0.0770	0.0405	0.704	No
Endrin	0.0140	0.527	1.33	--	3.495E-03	8.821E-03	0.100	0.0100	0.0350	0.882	No
alpha-Chlordane	0.0417	0.769	2.69	--	1.519E-02	5.314E-02	10.7	2.14	0.00142	0.0248	No
gamma-BHC (Lindane)	0.600	0.990	2.29	--	2.814E-01	6.510E-01	20.0	2.00	0.0141	0.325	No
Heptachlor Epoxide	0.0680	0.766	2.29	--	2.468E-02	7.377E-02	2.80	0.280	0.00881	0.263	No
Endosulfan I	0.0320	0.733	2.29	--	1.111E-02	3.472E-02	50.0	10.00	0.000222	0.00347	No
Endosulfan II	0.100	0.598	1.33	--	2.833E-02	6.301E-02	50.0	10.00	0.000567	0.00630	No
gamma-Chlordane	0.0864	0.724	2.58	--	2.964E-02	1.056E-01	10.7	2.14	0.00277	0.0493	No
Methoxychlor	0.120	0.190	0.311	--	1.080E-02	1.768E-02	1780	178	0.00000607	0.0000993	No
Total Chlordane (alpha & gamma)	0.144	0.732	2.63	--	4.994E-02	1.794E-01	10.7	2.14	0.00467	0.0838	No
Total DDT	1.61	0.479	1.34	--	3.654E-01	1.022E+00	0.0280	0.00280	13.0	365	Yes
Hexachlorobenzene	55.0	0.0833	0.314	--	2.171E+00	8.182E+00	3.35	0.670	0.648	12.2	Uncertain
Hexachlorobutadiene	11.8	0.0979	0.448	--	5.473E-01	2.505E+00	20.0	4.00	0.0274	0.626	No
Hexachloroethane	2.41	0.0982	0.460	--	1.121E-01	5.252E-01	5.00	1.00	0.0224	0.525	No
1,2-Dichlorobenzene	0.0400	59.7	59.7	--	1.131E+00	1.131E+00	161	16.1	0.00703	0.0703	No
1,3-Dichlorobenzene	8.85	62.7	62.7	--	2.629E+02	2.629E+02	161	16.1	1.63	16.3	Yes
1,4-Dichlorobenzene	1.05	61.2	61.2	--	3.044E+01	3.044E+01	161	16.1	0.189	1.89	Uncertain
bis(2-ethylhexyl)phthalate*	6.94	0.00	0.00	--	0.000E+00	0.000E+00	5.50	1.10	0.00	0.00	No
1,1,1-Trichloroethane*	0.115	0.00	0.00	--	0.000E+00	0.000E+00	NA	NA	--	--	See note d
1,1,2,2-Tetrachloroethane*	0.115	0.00	0.00	--	0.000E+00	0.000E+00	NA	NA	--	--	See note d
Acrylonitrile*	0.500	0.00	0.00	--	0.000E+00	0.000E+00	NA	NA	--	--	See note d
Benzene*	0.252	0.000	0.000	--	0.000E+00	0.000E+00	NA	NA	--	--	See note d
Chlorobenzene*	0.169	0.000	0.000	--	0.000E+00	0.000E+00	NA	NA	--	--	See note d
Toluene*	0.141	0.000	0.000	--	0.000E+00	0.000E+00	NA	NA	--	--	See note d
Total xylene*	1.90	0.00	0.00	--	0.000E+00	0.000E+00	NA	NA	--	--	See note d

Notes:

*Non-bioaccumulative; evaluated for direct ingestion only

a - No BSAF values for Naphthalene available for Prey Group; Benzo(a)pyrene BSAF used as surrogate

b - No BSAF values for PCB-77 and PCB-81 available for Prey Group; PCB-105 BSAF used as surrogate

c - No BSAF values for PCB-123 available for Prey Group; PCB-126 BSAF used as surrogate

d - Not assessed due to lack of available effects data (i.e. TRV)

Table C-11 Revised
Total Daily Intake and Hazard Quotient Worksheet for Raccoon

Scenario: Hypothetical omnivorous mammal receptor of concern - Raccoon

Exposure Assessment

Exposure Model	
Variables	
$ADD_{total} = ADD_{pot,diet} + ADD_{pot,se\ dim\ ent}$	$ADD_{pot,diet} = (C_k \times NIR_k)_{fish}$
$ADD_{pot,sed} = (C_s \times FS \times IR_{total}) / BW$	
ADD _{total} potential average daily dose (diet and sediment) (mgCOPC/kgBW/day; equivalent to TDI)	
ADD _{pot} potential average daily dose diet or sediment (mgCOPC/kgBW/day; equivalent to TDI)	
C _k Concentration in kth prey (mg/kg WW)*	
NIR _k Normalized ingestion rate of kth prey on WW basis (kgfood/kgBW/day)	
C _s Concentration in sediment (mg/kg DW)	
FS Fraction of sediment in diet (as percentage of diet on a DW basis)	
IR _{total} Food ingestion rate (gDW/day). When using IR _{total} WW, conversion to DW IRs is necessary	
BW Body weight (g)	
IR _{total} = IR _{fish} + IR _{inverts}	
$IR_{fish} = NIR_{fish} \times BW \times CF_1$	CF ₁ DW/WW conversion factor; fraction solids CF _{fish} - 0.18 DW/WW
$NIR_k = P_k \times NIR_{total}$	P _k Proportion of the diet fore kth food type on a WW basis
$NIR_{total} = \frac{FMR}{ME_{avg}}$	NIR _{total} Total normalized ingestion rate (g/gBW/day WW) FMR Free metabolic rate (kcal/day/kg BW; average sized receptor) ME _{avg} Average metabolizable energy of the total diet (kcal/g WW)
Concentration in tissue	
$C_n = C_s \times BSAF$	C _s Concentration in sediment (mg/kg DW) BSAF Biota-sediment accumulation factor (WW/DW)

FMR	99.7711127	kcal/day/kgBW	NIRfish	0.141419012	kgWW/kgBW-d
PD	1	unitless	IRtotal	160.8146291	gDW/d
AE _{fish}	0.83	unitless			
GE _{fish}	850	kcal/kg _{fish}			
FS	0.094				
AUF	1	unitless			
BW	3990	g			
a	6.03	unitless			
b	0.678	unitless			

Table C-11 Revised
Total Daily Intake and Hazard Quotient Worksheet for Raccoon

Chemical	95UCL C _s (mg/kg _{dw})	Geomean BSAF	95th percentile BSAF	TEF	Geomean TDI (mg/kg _{bw/day})	95th percentile TDI (mg/kg _{bw/day})	LOAEL (mg/kg _{bw/day})	NOAEL (mg/kg _{bw/day})	HQ LOAEL	HQ NOAEL	COPC
Arsenic	78.3	0.0558	0.0953	--	9.145E-01	1.352E+00	0.37	0.0371	2.5	36.4	Yes
Cadmium	0.985	0.0179	0.0484	--	6.225E-03	1.047E-02	5.44	0.544	0.0011	0.0193	No
Chromium	207	0.00503	0.00931	--	9.315E-01	1.057E+00	7450.00	1490	0.0001	0.00071	No
Copper	109	0.0412	0.161	--	1.048E+00	2.895E+00	10.90	8.28	0.0962	0.350	No
Lead	158	0.00341	0.0114	--	6.748E-01	8.533E-01	43.50	4.35	0.0155	0.196	No
Mercury	81.9	0.139	0.485	--	1.920E+00	5.928E+00	0.02	0.0106	108.4868	559	Yes
Nickel	52.8	0.00391	0.00928	--	2.292E-01	2.693E-01	43.50	21.8	0.0053	0.0124	No
Selenium	1.20	0.624	0.883	--	1.104E-01	1.544E-01	0.18	0.109	0.6136	1.42	Uncertain
Zinc	721	0.224	0.386	--	2.557E+01	4.209E+01	174.00	87.1	0.1470	0.483	No
2-Methylnaphthalene	10.5	0.0900	0.366	--	1.734E-01	5.833E-01	73.60	14.7	0.0024	0.0397	No
Acenaphthene	7.96	0.0884	0.358	--	1.297E-01	4.332E-01	25.80	5.15	0.0050	0.0841	No
Acenaphthylene	8.59	0.0968	0.394	--	1.501E-01	5.112E-01	25.80	5.15	0.0058	0.099	No
Anthracene	6.49	0.0944	0.382	--	1.112E-01	3.752E-01	147.00	29.4	0.0008	0.0128	No
Benzo(a)anthracene	2.75	0.101	0.395	--	4.970E-02	1.640E-01	2.94	0.294	0.0169	0.558	No
Benzo(a)pyrene	2.59	0.0822	0.539	--	3.992E-02	2.072E-01	2.94	0.294	0.0136	0.705	No
Benzo(b)fluoranthene	2.33	0.0765	0.480	--	3.403E-02	1.670E-01	2.94	0.294	0.0116	0.568	No
Benzo(g,h,i)perylene	3.06	0.0773	0.498	--	4.504E-02	2.271E-01	2.94	0.294	0.0153	0.772	No
Benzo(k)fluoranthene	2.24	0.0778	0.487	--	3.313E-02	1.628E-01	2.94	0.294	0.0113	0.554	No
Chrysene	3.04	0.0948	0.370	--	5.227E-02	1.706E-01	2.94	0.294	0.0178	0.580	No
Dibenzo(a,h)anthracene	2.84	0.0737	0.447	--	4.036E-02	1.903E-01	2.94	0.294	0.0137	0.647	No
Fluoranthene	5.47	0.0884	0.401	--	8.911E-02	3.309E-01	2.94	0.294	0.0303	1.13	Uncertain
Fluorene	5.56	0.0885	0.359	--	9.065E-02	3.033E-01	18.40	3.68	0.0049	0.0824	No
Indeno(1,2,3-cd)pyrene	0.832	0.0757	0.472	--	1.206E-02	5.869E-02	2.94	0.294	0.0041	0.200	No
Naphthalene ^a	28.8	0.0900	0.366	--	4.757E-01	1.600E+00	136.00	27.2	0.0035	0.0588	No
Phenanthrene	13.7	0.101	0.396	--	2.476E-01	8.191E-01	18.40	3.68	0.0135	0.223	No
Pyrene	11.2	0.0900	0.386	--	1.850E-01	6.538E-01	11.00	2.21	0.0168	0.296	No
Total HPAH 16	26.4	0.0485	0.199	--	2.811E-01	8.430E-01	2.94	0.294	0.0956	2.87	Uncertain
Total LPAH 16	137	0.0771	0.325	--	2.013E+00	6.816E+00	18.40	3.68	0.1094	1.85	Uncertain
Total PAH 16	63.7	0.0375	0.166	--	5.791E-01	1.737E+00	--	--	--	--	--
Aroclor 1248	60.4	0.115	0.486	--	1.211E+00	4.380E+00	0.11	0.0106	11.4257	413	Yes
Aroclor 1254	2.36	0.241	1.30	--	8.937E-02	4.428E-01	0.49	0.0991	0.1831	4.47	Uncertain
Aroclor 1260	0.820	0.206	0.724	--	2.700E-02	8.706E-02	0.49	0.0991	0.0553	0.879	No
Total PCB Aroclors	127	0.153	0.516	--	--	--	0.11	0.0106	--	--	--
PCB-077 ^b	0.0350	0.137	0.793	0.0001	8.107E-08	4.058E-07					
PCB-081 ^b	0.00154	0.137	0.793	0.0003	1.070E-08	5.356E-08					
PCB-105	0.107	0.137	0.793	0.00003	7.435E-08	3.721E-07					
PCB-114	0.00687	0.0553	0.253	0.00003	2.393E-09	8.155E-09					
PCB-118	0.122	0.722	7.52	0.00003	3.876E-07	3.906E-06					
PCB-123 ^c	0.0361	0.0537	0.435	0.00003	1.233E-08	7.073E-08					
PCB-126	0.000726	0.0537	0.435	0.1	8.264E-07	4.741E-06					
PCB-156	0.00970	0.127	0.524	0.00003	6.329E-09	2.267E-08					
PCB-157	0.00970	0.154	0.594	0.00003	7.440E-09	2.555E-08					
PCB-167	0.00294	0.146	0.472	0.00003	2.155E-09	6.221E-09					
PCB-169	0.000141	0.0730	0.134	0.03	5.969E-08	9.618E-08					
PCB-189	0.00106	0.0709	0.173	0.00003	4.393E-10	8.985E-10					
PCB congeners	NA	--	--	--	1.471E-06	9.709E-06	5.44E-06	5.44E-07	0.2704	17.84	Uncertain
1,2,3,4,6,7,8-HxCDD	0.000779	0.00106	0.00245	0.01	3.068E-08	3.221E-08					
1,2,3,4,6,7,8-HxCDF	0.00109	0.000682	0.0155	0.01	4.235E-08	6.519E-08					
1,2,3,4,7,8,9-HxCDF	0.000134	0.000371	0.00409	0.01	5.147E-09	5.852E-09					
1,2,3,4,7,8-HxCDD	0.0000138	0.00628	0.0441	0.1	6.454E-09	1.383E-08					
1,2,3,4,7,8-HxCDF	0.000392	0.00142	0.00383	0.1	1.564E-07	1.697E-07					

Table C-11 Revised
Total Daily Intake and Hazard Quotient Worksheet for Raccoon

Chemical	95UCL C _s (mg/kg _{dw})	Geomean BSAF	95th percentile BSAF	TEF	Geomean TDI (mg/kg _{bw/day})	95th percentile TDI (mg/kg _{bw/day})	LOAEL (mg/kg _{bw/day})	NOAEL (mg/kg _{bw/day})	HQ LOAEL	HQ NOAEL	COPC
1,2,3,6,7,8-HxCDD	0.0000443	0.00487	0.0178	0.1	1.983E-08	2.794E-08		see Dioxin/furan congener TEQ			
1,2,3,6,7,8-HxCDF	0.000120	0.0130	0.0350	0.1	6.752E-08	1.049E-07		see Dioxin/furan congener TEQ			
1,2,3,7,8,9-HxCDD	0.0000256	0.00554	0.0103	0.1	1.170E-08	1.343E-08		see Dioxin/furan congener TEQ			
1,2,3,7,8,9-HxCDF	0.00000931	0.00249	0.0609	0.1	3.855E-09	1.155E-08		see Dioxin/furan congener TEQ			
1,2,3,7,8-PeCDD	0.00000548	0.0209	0.133	1	3.696E-08	1.238E-07		see Dioxin/furan congener TEQ			
1,2,3,7,8-PeCDF	0.000208	0.00774	0.0140	0.03	3.047E-08	3.600E-08		see Dioxin/furan congener TEQ			
2,3,4,6,7,8-HxCDF	0.0000229	0.00206	0.0151	0.1	9.343E-09	1.357E-08		see Dioxin/furan congener TEQ			
2,3,4,7,8-PeCDF	0.0000803	0.0226	0.0611	0.3	1.683E-07	2.994E-07		see Dioxin/furan congener TEQ			
2,3,7,8-TCDD	0.000398	0.0305	0.101	1	3.225E-06	7.193E-06		see Dioxin/furan congener TEQ			
2,3,7,8-TCDF	0.000329	0.0441	0.108	0.1	3.298E-07	6.271E-07		see Dioxin/furan congener TEQ			
OCDD	0.00868	0.000722	0.00227	0.0003	1.013E-08	1.070E-08		see Dioxin/furan congener TEQ			
OCDF	0.0379	0.000256	0.000820	0.0003	4.349E-08	4.440E-08		see Dioxin/furan congener TEQ			
Dioxin/furan congeners	NA	--	--	--	4.197E-06	8.792E-06	5.44E-06	5.44E-07	0.7715	16.16	Uncertain
4,4'-DDD	0.0429	0.474	1.33	--	3.038E-03	8.231E-03	2.18	0.44	0.0014	0.02	No
4,4'-DDE	0.188	0.566	1.70	--	1.576E-02	4.591E-02	2.18	0.44	0.0072	0.11	No
4,4'-DDT	0.585	0.672	1.33	--	5.781E-02	1.122E-01	2.18	0.44	0.0265	0.26	No
Aldrin	0.0500	0.629	2.29	--	4.637E-03	1.638E-02	0.54	0.11	0.0085	0.15	No
Endrin	0.0140	0.508	1.33	--	1.059E-03	2.686E-03	0.27	0.03	0.0039	0.10	No
alpha-Chlordane	0.0417	0.729	2.69	--	4.457E-03	1.602E-02	2.71	1.35	0.0016	0.01	No
gamma-BHC (Lindane)	0.600	0.973	2.29	--	8.483E-02	1.966E-01	21.80	4.35	0.0039	0.05	No
Heptachlor Epoxide	0.0680	0.721	2.29	--	7.191E-03	2.228E-02	0.71	0.0708	0.0102	0.31	No
Endosulfan I	0.0320	0.702	2.29	--	3.298E-03	1.048E-02	0.41	0.0816	0.0081	0.13	No
Endosulfan II	0.100	0.593	1.33	--	8.765E-03	1.919E-02	0.41	0.0816	0.0215	0.24	No
gamma-Chlordane	0.0864	0.691	2.58	--	8.770E-03	3.185E-02	2.71	1.35	0.0032	0.02	No
Methoxychlor	0.120	0.176	0.311	--	3.441E-03	5.732E-03	4.35	2.18	0.0008	0.00	No
Total Chlordane (alpha & gamma)	0.144	0.701	2.63	--	1.482E-02	5.410E-02	2.71	1.35	0.0055	0.04	No
Total DDT	1.61	0.457	1.29	--	1.102E-01	2.998E-01	2.18	0.44	0.0505	0.69	No
Hexachlorobenzene	55.0	0.0849	0.306	--	8.687E-01	2.588E+00	15.10	1.57	0.0575	1.65	Uncertain
Hexachlorobutadiene	11.8	0.100	0.448	--	2.116E-01	7.923E-01	5.44	1.09	0.0389	0.73	No
Hexachloroethane	2.41	0.101	0.460	--	4.355E-02	1.659E-01	272.00	54.4	0.0002	0.00	No
1,2-Dichlorobenzene ^d	0.0400	0.0849	0.306	--	6.318E-04	1.883E-03	327.00	65.3	0.0000	0.00	No
1,3-Dichlorobenzene ^d	8.85	0.0849	0.306	--	1.398E-01	4.165E-01	233.00	46.6	0.0006	0.01	No
1,4-Dichlorobenzene ^d	1.05	0.0849	0.306	--	1.658E-02	4.942E-02	1630.00	327	0.0000	0.00	No
bis(2-ethylhexyl)phthalate*	6.94	0	0	--	2.629E-02	2.629E-02	26.8	12.96	0.0010	0.00	No
1,1,1-Trichloroethane*	0.115	0	0	--	4.357E-04	4.357E-04	1530.18	306.04	0.0000	0.00	No
1,1,2,2-Tetrachloroethane*	0.115	0	0	--	4.357E-04	4.357E-04	--	--	--	--	See note e
Acrylonitrile*	0.500	0	0	--	1.894E-03	1.894E-03	--	--	--	--	See note e
Benzene*	0.252	0	0	--	9.547E-04	9.547E-04	77.62158305	7.762158305	0.0000	0.0001	No
Chlorobenzene*	0.169	0	0	--	6.403E-04	6.403E-04	--	--	--	--	See note e
Toluene*	0.141	0	0	--	5.342E-04	5.342E-04	76.56150073	7.656150073	0.0000	0.00	No
Total xylene*	1.90	0	0	--	7.198E-03	7.198E-03	0.765615007	0.618381352	0.0094	0.01	No

Note:

*Non-bioaccumulative; evaluated for direct ingestion only

a - No BSAF values for Naphthalene available for Prey Group; Benzo(a)pyrene BSAF used as surrogate

b - No BSAF values for PCB-77 and PCB-81 available for Prey Group; PCB-105 BSAF used as surrogate

c - No BSAF values for PCB-123 available for Prey Group; PCB-126 BSAF used as surrogate

d - No BSAF values for 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene; hexachlorobenzene used as surrogate

e - Not assessed due to lack of available effects data (i.e. TRV)

Table C-12 Revised
Total Daily Intake and Hazard Quotient Worksheet for River Otter

Scenario: Hypothetical carnivorous mammal receptor of concern - River Otter

Exposure Assessment

Exposure Model	
$ADD_{total} = ADD_{pot,diet} + ADD_{pot,se\ dim\ ent}$	$ADD_{pot,diet} = (C_k \times NIR_k)_{fish}$
$ADD_{pot,sed} = (C_s \times FS \times IR_{total}) / BW$	
Variables	
ADDtotal potential average daily dose (diet and sediment) (mgCOPC/kgBW/day; equivalent to TDI) ADDpot potential average daily dose diet or sediment (mgCOPC/kgBW/day; equivalent to TDI) Ck Concentration in kth prey (mg/kg WW)* NIRk Normalized ingestion rate of kth prey on WW basis (kgfood/kgBW/day) Cs Concentration in sediment (mg/kg DW) FS Fraction of sediment in diet (as percentage of diet on a DW basis) IR _{total} Food ingestion rate (gDW/day). When using IR _{total} WW, conversion to DW IRS is necessary BW Body weight (g)	
IR _{total} = IR _{fish} + IR _{inverts}	
$IR_{fish} = NIR_{fish} \times BW \times CF_1$	CF ₁ DW/WW conversion factor; fraction solids CF _{fish} - 0.18 DW/WW
$IR_{inverts} = NIR_{inverts} \times BW \times CF_1$	CF _{invert} - 0.21 DW/WW
$NIR_k = P_k \times NIR_{total}$	P _k Proportion of the diet fore kth food type on a WW basis
$NIR_{total} = \frac{FMR}{ME_{avg}}$	NIR _{total} Total normalized ingestion rate (g/gBW/day WW) FMR Free metabolic rate (kcal/day/kg BW; average sized receptor) ME _{avg} Average metabolizable energy of the total diet (kcal/g WW)
Concentration in tissue	
$C_n = C_s \times BSAF$	C_s Concentration in sediment (mg/kg DW) BSAF Biota-sediment accumulation factor (WW/DW)

FMR	139.913	kcal/day/kg BW	NIRfish	0.195956243	kgWW/kgBW-d
PD	1	unitless	IRtotal	414.9471432	gDW/d
AE _{fish}	0.84	unitless	a	2.23	unitless
GE _{fish}	850	kcal/kg _{fish}	b	0.85	unitless
FS	0.013	kg DW/kg BW/day			
AUF	1	unitless			
BW	7430	g			

Table C-12 Revised
Total Daily Intake and Hazard Quotient Worksheet for River Otter

Chemical	95UCL C _s (mg/kg _{dw})	Geomean BSAF fish class 1	95th percentile BSAF fish class 1	Geomean BSAF fish class 4	95th percentile BSAF fish class 4	TEF	Geomean TDI (mg/kg _{bw} /day)	95th percentile TDI (mg/kg _{bw} /day)	LOAEL (mg/kg _{bw} /day)	NOAEL (mg/kg _{bw} /day)	HQ LOAEL	HQ NOAEL	COPC
Arsenic	78.3	0.0558	0.0953	0.0965	0.264	--	1.225E+00	2.813E+00	0.3180	0.03180	3.9	88.5	Yes
Cadmium	0.985	0.0179	0.0484	0.00639	0.0121	--	3.059E-03	6.554E-03	4.660	0.4660	0.0007	0.0141	No
Chromium	207	0.00503	0.00931	0.00286	0.0143	--	3.103E-01	6.291E-01	6380	1280	0.0000	0.0005	No
Copper	109	0.0412	0.161	0.0113	0.191	--	6.398E-01	3.838E+00	9.330	7.090	0.0686	0.5414	No
Lead	158	0.00341	0.0114	0.00121	0.0180	--	1.862E-01	5.698E-01	37.30	3.730	0.0050	0.1528	No
Mercury	81.9	0.139	0.485	0.107	0.347	--	2.033E+00	6.736E+00	0.01510	0.009090	134.6666	741.0086	Yes
Nickel	52.8	0.00391	0.00928	0.00582	0.0211	--	8.867E-02	1.955E-01	37.30	18.60	0.0024	0.0105	No
Selenium	1.20	0.624	0.883	0.746	2.83	--	1.619E-01	4.374E-01	0.1540	0.09320	1.0516	4.6934	Yes
Zinc	721	0.224	0.386	0.0641	0.150	--	2.088E+01	3.839E+01	149.0	74.50	0.1401	0.5153	No
2-Methylnaphthalene	10.5	0.0900	0.366	0.0257	0.0237	--	1.267E-01	4.085E-01	63.00	12.60	0.0020	0.0324	No
Acenaphthene	7.96	0.0884	0.358	0.0252	0.0236	--	9.438E-02	3.034E-01	22.10	4.410	0.0043	0.0688	No
Acenaphthylene	8.59	0.0968	0.394	0.0265	0.0245	--	1.100E-01	3.585E-01	22.10	4.410	0.0050	0.0813	No
Anthracene	6.49	0.0944	0.382	0.0260	0.0240	--	8.127E-02	2.629E-01	126.0	25.20	0.0006	0.0104	No
Benzo(a)anthracene	2.75	0.101	0.395	0.0260	0.0240	--	3.622E-02	1.149E-01	2.520	0.2520	0.0144	0.4559	No
Benzo(a)pyrene	2.59	0.0822	0.539	0.0263	0.0240	--	2.941E-02	1.447E-01	2.520	0.2520	0.0117	0.5744	No
Benzo(b)fluoranthene	2.33	0.0765	0.480	0.0254	0.0233	--	2.495E-02	1.166E-01	2.520	0.2520	0.0099	0.4627	No
Benzo(g,h,i)perylene	3.06	0.0773	0.498	0.0260	0.0238	--	3.319E-02	1.587E-01	2.520	0.2520	0.0132	0.6296	No
Benzo(k)fluoranthene	2.24	0.0778	0.487	0.0259	0.0237	--	2.439E-02	1.137E-01	2.520	0.2520	0.0097	0.4512	No
Chrysene	3.04	0.0948	0.370	0.0254	0.0234	--	3.801E-02	1.194E-01	2.520	0.2520	0.0151	0.4737	No
Dibenzo(a,h)anthracene	2.84	0.0737	0.447	0.0258	0.0236	--	2.975E-02	1.330E-01	2.520	0.2520	0.0118	0.5278	No
Fluoranthene	5.47	0.0884	0.401	0.0241	0.0223	--	6.426E-02	2.308E-01	2.520	0.2520	0.0255	0.9160	No
Fluorene	5.56	0.0885	0.359	0.0241	0.0223	--	6.538E-02	2.118E-01	15.80	3.150	0.0041	0.0672	No
Indeno(1,2,3-cd)pyrene	0.832	0.0757	0.472	0.0261	0.0239	--	8.903E-03	4.103E-02	2.520	0.2520	0.0035	0.1628	No
Naphthalene ^a	28.8	0.0900	0.366	0.0261	0.0239	--	3.485E-01	1.121E+00	116.0	23.30	0.0030	0.0481	No
Phenanthrene	13.7	0.101	0.396	0.0271	0.0251	--	1.819E-01	5.752E-01	15.80	3.150	0.0115	0.1826	No
Pyrene	11.2	0.0900	0.386	0.0247	0.0228	--	1.340E-01	4.567E-01	9.450	1.890	0.0142	0.2417	No
Total HPAH 16	26.4	0.0485	0.199	0.0151	0.0139	--	1.837E-01	5.699E-01	2.520	0.2520	0.0729	2.2613	Uncertain
Total LPAH 16	137	0.0771	0.325	0.0120	0.0186	--	1.295E+00	4.712E+00	15.80	3.150	0.0820	1.4957	Uncertain
Total PAH 16	63.7	0.0375	0.166	0.00537	0.0112	--	3.138E-01	1.152E+00	--	--	--	--	--
Aroclor 1248	60.4	0.115	0.486	0.0952	0.255	--	1.288E+00	4.429E+00	0.09060	0.009060	14.2140	488.8520	Yes
Aroclor 1254	2.36	0.241	1.30	0.442	5.49	--	1.596E-01	1.572E+00	0.4180	0.08480	0.3819	18.5348	Uncertain
Aroclor 1260	0.820	0.206	0.724	1.04	22.1	--	1.007E-01	1.834E+00	0.4180	0.08480	0.2409	21.6312	Uncertain
Total PCB Aroclors	127	0.153	0.516	0.194	4.16	--	--	--	0.09060	0.009060	--	--	--
PCB-077 ^b	0.0350	0.137	0.793	0.116	0.407	0.0001	8.930E-08	4.140E-07					see PCB congener TEQ
PCB-081 ^b	0.00154	0.137	0.793	0.116	0.407	0.0003	1.179E-08	5.465E-08					see PCB congener TEQ
PCB-105	0.107	0.137	0.793	0.116	0.407	0.00003	8.190E-08	3.797E-07					see PCB congener TEQ
PCB-114	0.00687	0.0553	0.253	0.0977	0.366	0.00003	3.239E-09	1.265E-08					see PCB congener TEQ
PCB-118	0.122	0.722	7.52	0.839	3.04	0.00003	5.624E-07	3.789E-06					see PCB congener TEQ
PCB-123 ^c	0.0361	0.0537	0.435	0.0831	0.516	0.00003	1.530E-08	1.017E-07					see PCB congener TEQ
PCB-126	0.000726	0.0537	0.435	0.0831	0.516	0.1	1.026E-06	6.817E-06					see PCB congener TEQ
PCB-156	0.00970	0.127	0.524	0.164	0.648	0.00003	8.508E-09	3.363E-08					see PCB congener TEQ
PCB-157	0.00970	0.154	0.594	0.179	0.639	0.00003	9.706E-09	3.537E-08					see PCB congener TEQ
PCB-167	0.00294	0.146	0.472	0.198	0.849	0.00003	3.037E-09	1.148E-08					see PCB congener TEQ
PCB-169	0.000141	0.0730	0.134	0.0846	0.0899	0.03	6.839E-08	9.587E-08					see PCB congener TEQ
PCB-189	0.00106	0.0709	0.173	0.162	1.06	0.00003	7.487E-10	3.865E-09					see PCB congener TEQ
PCB congeners TEQ	NA	--	--	--	--	--	1.880E-06	1.175E-05	4.66E-06	4.66E-07	0.4035	25.2210	Uncertain
1,2,3,4,6,7,8-HxCDD	0.000779	0.00106	0.00245	0.00245	0.0281	0.01	8.335E-09	2.897E-08					see Dioxin/furan congener TEQ
1,2,3,4,6,7,8-HxCDF	0.00109	0.000682	0.0155	0.00426	0.0248	0.01	1.319E-08	5.095E-08					see Dioxin/furan congener TEQ
1,2,3,4,7,8,9-HxCDF	0.000134	0.000371	0.00409	0.000301	0.00192	0.01	1.061E-09	1.762E-09			</td		

Table C-12 Revised
Total Daily Intake and Hazard Quotient Worksheet for River Otter

Chemical	95UCL C _s (mg/kg _{dw})	Geomean BSAF fish class 1	95th percentile BSAF fish class 1	Geomean BSAF fish class 4	95th percentile BSAF fish class 4	TEF	Geomean TDI (mg/kg _{bw} /day)	95th percentile TDI (mg/kg _{bw} /day)	LOAEL (mg/kg _{bw} /day)	NOAEL (mg/kg _{bw} /day)	HQ LOAEL	HQ NOAEL	COPC
1,2,3,6,7,8-HxCDD	0.0000443	0.00487	0.0178	0.0248	0.215	0.1	1.609E-08	1.043E-07		see Dioxin/furan congener TEQ			
1,2,3,6,7,8-HxCDF	0.000120	0.0130	0.0350	0.0133	0.0563	0.1	3.963E-08	1.161E-07		see Dioxin/furan congener TEQ			
1,2,3,7,8,9-HxCDD	0.0000256	0.00554	0.0103	0.0179	0.0763	0.1	7.738E-09	2.358E-08		see Dioxin/furan congener TEQ			
1,2,3,7,8,9-HxCDF	0.00000931	0.00249	0.0609	0.00158	0.0194	0.1	1.047E-09	8.001E-09		see Dioxin/furan congener TEQ			
1,2,3,7,8-PeCDD	0.00000548	0.0209	0.133	0.0201	0.190	1	2.599E-08	1.774E-07		see Dioxin/furan congener TEQ			
1,2,3,7,8-PeCDF	0.000208	0.00774	0.0140	0.0294	0.381	0.03	2.724E-08	2.460E-07		see Dioxin/furan congener TEQ			
2,3,4,6,7,8-HxCDF	0.0000229	0.00206	0.0151	0.00238	0.0318	0.1	2.659E-09	1.219E-08		see Dioxin/furan congener TEQ			
2,3,4,7,8-PeCDF	0.0000803	0.0226	0.0611	0.00583	0.247	0.3	8.459E-08	7.447E-07		see Dioxin/furan congener TEQ			
2,3,7,8-TCDD	0.000398	0.0305	0.101	0.0361	0.324	1	2.886E-06	1.686E-05		see Dioxin/furan congener TEQ			
2,3,7,8-TCDF	0.000329	0.0441	0.108	0.0368	0.941	0.1	2.847E-07	3.405E-06		see Dioxin/furan congener TEQ			
OCDD	0.00868	0.000722	0.00227	0.00112	0.0217	0.0003	2.361E-09	8.006E-09		see Dioxin/furan congener TEQ			
OCDF	0.0379	0.000256	0.000820	0.0000558	0.000779	0.0003	8.602E-09	1.004E-08		see Dioxin/furan congener TEQ			
Dioxin/furan congener TEQ	NA	--	--	--	--	--	7.212E-06	4.545E-05	4.66E-06	0.00000047	1.5477	97.5555	Yes
4,4'-DDD	0.0429	0.474	1.33	0.571	3.31	--	4.424E-03	1.953E-02	1.860	0.3730	0.0024	0.0524	No
4,4'-DDE	0.188	0.566	1.70	1.22	18.1	--	3.303E-02	3.649E-01	1.860	0.3730	0.0178	0.9782	No
4,4'-DDT	0.585	0.672	1.33	0.778	8.08	--	8.353E-02	5.398E-01	1.860	0.3730	0.0449	1.4471	Uncertain
Aldrin	0.0500	0.629	2.29	0.758	4.89	--	6.831E-03	3.521E-02	0.4660	0.09320	0.0147	0.3778	No
Endrin	0.0140	0.508	1.33	0.511	0.934	--	1.408E-03	3.116E-03	0.2320	0.02320	0.0061	0.1343	No
alpha-Chlordane	0.0417	0.729	2.69	0.960	5.05	--	6.931E-03	3.165E-02	2.320	1.160	0.0030	0.0273	No
gamma-BHC (Lindane)	0.600	0.973	2.29	0.867	0.881	--	1.086E-01	1.868E-01	18.60	3.730	0.0058	0.0501	No
Heptachlor Epoxide	0.0680	0.721	2.29	0.686	0.994	--	9.424E-03	2.193E-02	0.6060	0.06060	0.0156	0.3619	No
Endosulfan I	0.0320	0.702	2.29	0.655	0.884	--	4.278E-03	9.975E-03	0.3490	0.06990	0.0123	0.1427	No
Endosulfan II	0.100	0.593	1.33	0.681	2.68	--	1.256E-02	3.936E-02	0.3490	0.06990	0.0360	0.5631	No
gamma-Chlordane	0.0864	0.691	2.58	0.967	4.24	--	1.410E-02	5.780E-02	2.320	1.160	0.0061	0.0498	No
Methoxychlor	0.120	0.176	0.311	0.207	0.660	--	4.590E-03	1.150E-02	3.730	1.860	0.0012	0.0062	No
Total Chlordane (alpha & gamma)	0.144	0.701	2.63	1.11	3.37	--	2.566E-02	8.476E-02	2.320	1.160	0.0111	0.0731	No
Total DDT	1.61	0.457	1.29	0.742	2.00	--	1.903E-01	5.201E-01	1.860	0.3730	0.1023	1.3945	Uncertain
Hexachlorobenzene	55.0	0.0849	0.306	0.0269	0.216	--	6.424E-01	2.853E+00	12.90	1.350	0.0498	2.1132	Uncertain
Hexachlorobutadiene	11.8	0.100	0.448	0.0380	0.201	--	1.681E-01	7.589E-01	4.660	0.9320	0.0361	0.8143	No
Hexachloroethane	2.41	0.101	0.460	0.0272	0.0252	--	3.202E-02	1.163E-01	233.0	46.60	0.0001	0.0025	No
1,2-Dichlorobenzene ^d	0.0400	0.0849	0.306	15.2	15.2	--	5.993E-02	6.080E-02	280.0	55.90	0.0002	0.0011	No
1,3-Dichlorobenzene ^d	8.85	0.0849	0.306	15.8	15.8	--	1.378E+01	1.397E+01	200.0	39.90	0.0689	0.3502	No
1,4-Dichlorobenzene ^d	1.05	0.0849	0.306	15.7	15.7	--	1.625E+00	1.647E+00	1400	280.0	0.0012	0.0059	No
bis(2-ethylhexyl)phthalate*	6.94	0	0	0	0	--	5.039E-03	5.039E-03	22.94	11.090	0.0002	0.0005	No
1,1,1-Trichloroethane*	0.115	0	0	0	0	--	8.349E-05	8.349E-05	1309.91	262.0	0.0000	0.0000	No
1,1,2,2-Tetrachloroethane*	0.115	0	0	0	0	--	8.349E-05	8.349E-05	--	--	--	--	See note e
Acrylonitrile*	0.500	0	0	0	0	--	3.630E-04	3.630E-04	--	--	--	--	See note e
Benzene*	0.252	0	0	0	0	--	1.830E-04	1.830E-04	66.45	6.650	0.0000	0.0000	No
Chlorobenzene*	0.169	0	0	0	0	--	1.227E-04	1.227E-04	--	--	--	--	NA
Toluene*	0.141	0	0	0	0	--	1.024E-04	1.024E-04	65.49	6.550	0.0000	0.0000	See note e
Total xylene*	1.90	0	0	0	0	--	1.379E-03	1.379E-03	0.6600	0.5300	0.0021	0.0026	No

Notes

*Non-bioaccumulative; evaluated for direct ingestion only

a - No BSAF values for Naphthalene available for Prey Group; Benzo(a)pyrene BSAF used as surrogate

b - No BSAF values for PCB-77 and PCB-81 available for Prey Group; PCB-105 BSAF used as surrogate

c - No BSAF values for PCB-123 available for Prey Group; PCB-126 BSAF used as surrogate

d - No BSAF values for 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene Group 1 Fish; hexachlorobenzene used as surrogate

e - Not assessed due to lack of available effects data (i.e. TRV)

Table C-13 Revised
Total Daily Intake and Hazard Quotient Worksheet for Mink

Scenario: Hypothetical carnivorous mammal receptor of concern - Mink

Exposure Assessment

Exposure Model	
Variables	
$ADD_{total} = ADD_{pot,diet} + ADD_{pot,sediment}$	$ADD_{pot,diet} = (C_k \times NIR_k)_{fish}$
$ADD_{pot,sed} = (C_s \times FS \times IR_{total}) / BW$	
ADD _{total} potential average daily dose (diet and sediment) (mgCOPC/kgBW/day; equivalent to TDI)	
ADD _{pot} potential average daily dose diet or sediment (mgCOPC/kgBW/day; equivalent to TDI)	
C _k Concentration in kth prey (mg/kg WW)*	
NIR _k Normalized ingestion rate of kth prey on WW basis (kgfood/kgBW/day)	
C _s Concentration in sediment (mg/kg DW)	
FS Fraction of sediment in diet (as percentage of diet on a DW basis)	
IR _{total} Food ingestion rate (gDW/day). When using IR _{total} WW, conversion to DW IRs is necessary	
BW Body weight (g)	
IR _{total} = IR _{fish} + IR _{inverts}	
$IR_{fish} = NIR_{fish} \times BW \times CF_1$	CF ₁ DW/WW conversion factor; fraction solids CF _{fish} - 0.18 DW/WW
$NIR_k = P_k \times NIR_{total}$	P _k Proportion of the diet fore kth food type on a WW basis
$NIR_{total} = \frac{FMR}{ME_{avg}}$	NIR _{total} Total normalized ingestion rate (g/gBW/day WW) FMR Free metabolic rate (kcal/day/kg BW; average sized receptor) ME _{avg} Average metabolizable energy of the total diet (kcal/g WW)
Concentration in tissue	
$C_n = C_s \times BSAF$	C _s Concentration in sediment (mg/kg DW) BSAF Biota-sediment accumulation factor (WW/DW)

FMR	193.6153118	kcal/day/kg BW	NIRfish	0.271169904	kgWW/kgBW-d
PD	1	unitless	IRtotal	65.84547619	gDW/d
AE _{fish}	0.84	unitless			
GE _{fish}	850	kcal/kg _{fish}			
FS	0.0130				
AUF	1	unitless			
BW	852	g			
a	2.23	unitless			
b	0.85	unitless			

Table C-13 Revised
Total Daily Intake and Hazard Quotient Worksheet for Mink

Chemical	95UCL C _s (mg/kg _{dw})	Geomean BSAF fish class 1	95th percentile BSAF fish class 1	Geomean BSAF fish class 4	95th percentile BSAF fish class 4	TEF	Geomean TDI (mg/kg _{bw} /day)	95th percentile TDI (mg/kg _{bw} /day)	LOAEL (mg/kg _{bw} /day)	NOAEL (mg/kg _{bw} /day)	HQ LOAEL	HQ NOAEL	COPC
Arsenic	78.3	0.0558	0.0953	0.0965	0.264	--	1.696E+00	3.893E+00	0.55	0.05	3.105	71.302	Yes
Cadmium	0.985	0.0179	0.0484	0.00639	0.0121	--	4.234E-03	9.069E-03	8.01	0.80	0.001	0.011	No
Chromium	207	0.00503	0.00931	0.00286	0.0143	--	4.294E-01	8.706E-01	11000.00	2190.00	0.000	0.000	No
Copper	109	0.0412	0.161	0.0113	0.191	--	8.854E-01	5.312E+00	16.00	12.20	0.055	0.435	No
Lead	158	0.00341	0.0114	0.00121	0.0180	--	2.577E-01	7.886E-01	64.00	6.40	0.004	0.123	No
Mercury	81.9	0.139	0.485	0.107	0.347	--	2.814E+00	9.321E+00	0.03	0.02	108.230	597.510	Yes
Nickel	52.8	0.00391	0.00928	0.00582	0.0211	--	1.227E-01	2.705E-01	64.00	32.00	0.002	0.008	No
Selenium	1.20	0.624	0.883	0.746	2.83	--	2.241E-01	6.053E-01	0.26	0.16	0.849	3.783	Uncertain
Zinc	721	0.224	0.386	0.0641	0.150	--	2.889E+01	5.312E+01	256.00	128.00	0.113	0.415	No
2-Methylnaphthalene	10.5	0.0900	0.366	0.0257	0.0237	--	1.753E-01	5.653E-01	108.00	21.70	0.002	0.026	No
Acenaphthene	7.96	0.0884	0.358	0.0252	0.0236	--	1.306E-01	4.198E-01	37.90	7.58	0.003	0.055	No
Acenaphthylene	8.59	0.0968	0.394	0.0265	0.0245	--	1.522E-01	4.960E-01	37.90	7.58	0.004	0.065	No
Anthracene	6.49	0.0944	0.382	0.0260	0.0240	--	1.125E-01	3.638E-01	217.00	43.30	0.001	0.008	No
Benzo(a)anthracene	2.75	0.101	0.395	0.0260	0.0240	--	5.012E-02	1.590E-01	4.33	0.43	0.012	0.367	No
Benzo(a)pyrene	2.59	0.0822	0.539	0.0263	0.0240	--	4.070E-02	2.003E-01	4.33	0.43	0.009	0.463	No
Benzo(b)fluoranthene	2.33	0.0765	0.480	0.0254	0.0233	--	3.453E-02	1.613E-01	4.33	0.43	0.008	0.373	No
Benzo(g,h,i)perylene	3.06	0.0773	0.498	0.0260	0.0238	--	4.593E-02	2.196E-01	4.33	0.43	0.011	0.507	No
Benzo(k)fluoranthene	2.24	0.0778	0.487	0.0259	0.0237	--	3.375E-02	1.574E-01	4.33	0.43	0.008	0.363	No
Chrysene	3.04	0.0948	0.370	0.0254	0.0234	--	5.260E-02	1.652E-01	4.33	0.43	0.012	0.382	No
Dibenzo(a,h)anthracene	2.84	0.0737	0.447	0.0258	0.0236	--	4.117E-02	1.841E-01	4.33	0.43	0.010	0.425	No
Fluoranthene	5.47	0.0884	0.401	0.0241	0.0223	--	8.893E-02	3.194E-01	4.33	0.43	0.021	0.738	No
Fluorene	5.56	0.0885	0.359	0.0241	0.0223	--	9.047E-02	2.930E-01	27.10	5.41	0.003	0.054	No
Indeno(1,2,3-cd)pyrene	0.832	0.0757	0.472	0.0261	0.0239	--	1.232E-02	5.678E-02	4.33	0.43	0.003	0.131	No
Naphthalene ^a	28.8	0.0900	0.366	0.0257	0.0237	--	4.807E-01	1.551E+00	200.00	40.00	0.002	0.039	No
Phenanthrene	13.7	0.101	0.396	0.0271	0.0251	--	2.517E-01	7.960E-01	27.10	5.41	0.009	0.147	No
Pyrene	11.2	0.0900	0.386	0.0247	0.0228	--	1.854E-01	6.320E-01	16.20	3.25	0.011	0.194	No
Total HPAH 16	26.4	0.0485	0.199	0.0151	0.0139	--	2.542E-01	7.886E-01	4.33	0.43	0.059	1.821	Uncertain
Total LPAH 16	137	0.0771	0.325	0.0120	0.0186	--	1.793E+00	6.520E+00	27.10	5.41	0.066	1.205	Uncertain
Total PAH 16	63.7	0.0375	0.166	0.00537	0.0112	--	4.343E-01	1.594E+00	--	--	--	--	--
Aroclor 1248	60.4	0.115	0.486	0.0952	0.255	--	1.782E+00	6.129E+00	0.16	0.02	11.424	392.883	Yes
Aroclor 1254	2.36	0.241	1.30	0.442	5.49	--	2.209E-01	2.175E+00	0.72	0.15	0.308	14.898	Uncertain
Aroclor 1260	0.820	0.206	0.724	1.04	22.1	--	1.394E-01	2.538E+00	0.72	0.15	0.194	17.386	Uncertain
Total PCB Aroclors	127	0.153	0.516	0.194	4.16	--	--	--	0.16	0.02	--	--	--
PCB-077 ^b	0.0350	0.137	0.793	0.116	0.407	0.0001	1.236E-07	5.730E-07					see PCB congener TEQ
PCB-081 ^b	0.00154	0.137	0.793	0.116	0.407	0.0003	1.631E-08	7.563E-08					see PCB congener TEQ
PCB-105	0.107	0.137	0.793	0.116	0.407	0.0003	1.133E-07	5.255E-07					see PCB congener TEQ
PCB-114	0.00687	0.0553	0.253	0.0977	0.366	0.0003	4.483E-09	1.750E-08					see PCB congener TEQ
PCB-118	0.122	0.722	7.52	0.839	3.04	0.0003	7.783E-07	5.244E-06					see PCB congener TEQ
PCB-123 ^c	0.0361	0.0537	0.435	0.0831	0.516	0.0003	2.118E-08	1.407E-07					see PCB congener TEQ
PCB-126	0.000726	0.0537	0.435	0.0831	0.516	0.1	1.420E-06	9.434E-06					see PCB congener TEQ
PCB-156	0.00970	0.127	0.524	0.164	0.648	0.00003	1.177E-08	4.653E-08					see PCB congener TEQ
PCB-157	0.00970	0.154	0.594	0.179	0.639	0.00003	1.343E-08	4.894E-08					see PCB congener TEQ
PCB-167	0.00294	0.146	0.472	0.198	0.849	0.00003	4.202E-09	1.589E-08					see PCB congener TEQ
PCB-169	0.000141	0.0730	0.134	0.0846	0.0899	0.03	9.464E-08	1.327E-07					see PCB congener TEQ
PCB-189	0.00106	0.0709	0.173	0.162	1.06	0.00003	1.036E-09	5.348E-09					see PCB congener TEQ
PCB congeners TEQ	NA	--	--	--	--	--	2.602E-06	1.626E-05	8.01E-06	8.01E-07	0.3	20	Uncertain
1,2,3,4,6,7,8-HpCDD	0.000779	0.00106	0.00245	0.00245	0.0281	0.01	1.153E-08	4.009E-08					see Dioxin/furan congener TEQ
1,2,3,4,6,7,8-HpCDF	0.00109	0.000682	0.0155	0.00426	0.0248	0.01	1.825E-08	7.051E-08					see Dioxin/furan congener TEQ
1,2,3,4,7,8,9-HpCDF	0.000134	0.000371	0.00409	0.000301	0.00192	0.01	1.468E-09	2.438E-09					see Dioxin/furan congener TEQ
1,2,3,4,7,8-HxCDD	0.0000138	0.00628	0.0441	0.0162	0.0555	0.1	5.593E-09	2.002E-08					

Table C-13 Revised
Total Daily Intake and Hazard Quotient Worksheet for Mink

Chemical	95UCL C _s (mg/kg _{dw})	Geomean BSAF fish class 1	95th percentile BSAF fish class 1	Geomean BSAF fish class 4	95th percentile BSAF fish class 4	TEF	Geomean TDI (mg/kg _{bw} /day)	95th percentile TDI (mg/kg _{bw} /day)	LOAEL (mg/kg _{bw} /day)	NOAEL (mg/kg _{bw} /day)	HQ LOAEL (mg/kg _{bw} /day)	HQ NOAEL (mg/kg _{bw} /day)	COPC
1,2,3,4,7,8-HxCDF	0.000392	0.00142	0.00383	0.00128	0.0240	0.1	5.373E-08	1.873E-07			see Dioxin/furan congener TEQ		
1,2,3,6,7,8-HxCDD	0.0000443	0.00487	0.0178	0.0248	0.215	0.1	2.227E-08	1.443E-07			see Dioxin/furan congener TEQ		
1,2,3,6,7,8-HxCDF	0.000120	0.0130	0.0350	0.0133	0.0563	0.1	5.485E-08	1.606E-07			see Dioxin/furan congener TEQ		
1,2,3,7,8,9-HxCDD	0.0000256	0.00554	0.0103	0.0179	0.0763	0.1	1.071E-08	3.263E-08			see Dioxin/furan congener TEQ		
1,2,3,7,8,9-HxCDF	0.00000931	0.00249	0.0609	0.00158	0.0194	0.1	1.449E-09	1.107E-08			see Dioxin/furan congener TEQ		
1,2,3,7,8-PeCDD	0.00000548	0.0209	0.133	0.0201	0.190	1	3.597E-08	2.455E-07			see Dioxin/furan congener TEQ		
1,2,3,7,8-PeCDF	0.000208	0.00774	0.0140	0.0294	0.381	0.03	3.769E-08	3.405E-07			see Dioxin/furan congener TEQ		
2,3,4,6,7,8-HxCDF	0.0000229	0.00206	0.0151	0.00238	0.0318	0.1	3.679E-09	1.686E-08			see Dioxin/furan congener TEQ		
2,3,4,7,8-PeCDF	0.0000803	0.0226	0.0611	0.00583	0.247	0.3	1.171E-07	1.031E-06			see Dioxin/furan congener TEQ		
2,3,7,8-TCDD	0.000398	0.0305	0.101	0.0361	0.324	1	3.994E-06	2.333E-05			see Dioxin/furan congener TEQ		
2,3,7,8-TCDF	0.000329	0.0441	0.108	0.0368	0.941	0.1	3.939E-07	4.712E-06			see Dioxin/furan congener TEQ		
OCDD	0.00868	0.000722	0.00227	0.00112	0.0217	0.0003	3.267E-09	1.108E-08			see Dioxin/furan congener TEQ		
OCDF	0.0379	0.000256	0.000820	0.0000558	0.000779	0.0003	1.190E-08	1.389E-08			see Dioxin/furan congener TEQ		
Dioxin/furan congeners TEQ	NA	--	--	--	--	--	9.981E-06	6.289E-05	8.01E-06	8.01E-07	1.246	78.559	Yes
4,4'-DDD	0.0429	0.474	1.33	0.571	3.31	--	6.121E-03	2.703E-02	3.20	0.64	0.002	0.042	No
4,4'-DDE	0.188	0.566	1.70	1.22	18.1	--	4.571E-02	5.049E-01	3.20	0.64	0.014	0.789	No
4,4'-DDT	0.585	0.672	1.33	0.778	8.08	--	1.156E-01	7.470E-01	3.20	0.64	0.036	1.167	Uncertain
Aldrin	0.0500	0.629	2.29	0.758	4.89	--	9.453E-03	4.873E-02	0.80	0.16	0.012	0.305	No
Endrin	0.0140	0.508	1.33	0.511	0.934	--	1.948E-03	4.312E-03	0.40	0.04	0.005	0.108	No
alpha-Chlordane	0.0417	0.729	2.69	0.960	5.05	--	9.591E-03	4.380E-02	3.99	2	0.002	0.022	No
gamma-BHC (Lindane)	0.600	0.973	2.29	0.867	0.881	--	1.503E-01	2.586E-01	32.00	6	0.005	0.040	No
Heptachlor Epoxide	0.0680	0.721	2.29	0.686	0.994	--	1.304E-02	3.035E-02	1.04	0	0.013	0.292	No
Endosulfan I	0.0320	0.702	2.29	0.655	0.884	--	5.920E-03	1.380E-02	0.60	0	0.010	0.115	No
Endosulfan II	0.100	0.593	1.33	0.681	2.68	--	1.737E-02	5.447E-02	0.60	0	0.029	0.454	No
gamma-Chlordane	0.0864	0.691	2.58	0.967	4.24	--	1.951E-02	7.998E-02	3.99	2	0.005	0.040	No
Methoxychlor	0.120	0.176	0.311	0.207	0.660	--	6.352E-03	1.592E-02	6.40	3	0.001	0.005	No
Total Chlordane (alpha & gamma)	0.144	0.701	2.63	1.11	3.37	--	3.550E-02	1.173E-01	3.99	2	0.009	0.059	No
Total DDT	1.61	0.457	1.29	0.742	2.00	--	2.633E-01	7.198E-01	3.20	0.64	0.082	1.125	Uncertain
Hexachlorobenzene	55.0	0.0849	0.306	0.0269	0.216	--	8.890E-01	3.948E+00	22.20	2	0.040	1.709	Uncertain
Hexachlorobutadiene	11.8	0.100	0.448	0.0380	0.201	--	2.326E-01	1.050E+00	8.01	2	0.029	0.656	No
Hexachloroethane	2.41	0.101	0.460	0.0272	0.0252	--	4.431E-02	1.610E-01	400.00	80	0.000	0.002	No
1,2-Dichlorobenzene ^d	0.0400	0.0849	0.306	15.2	15.2	--	8.294E-02	8.414E-02	480.00	96	0.000	0.001	No
1,3-Dichlorobenzene ^d	8.85	0.0849	0.306	15.8	15.8	--	1.907E+01	1.933E+01	343.00	69	0.056	0.282	No
1,4-Dichlorobenzene ^d	1.05	0.0849	0.306	15.7	15.7	--	2.248E+00	2.280E+00	2400	480	0.001	0.005	No
bis(2-ethylhexyl)phthalate*	6.94	0	0	0	0	--	6.973E-03	6.973E-03	39.4	19.06	0.000	0.000	No
1,1,1-Trichloroethane*	0.115	0	0	0	0	--	1.155E-04	1.155E-04	2251.01	450	0.000	0.000	No
1,1,2,2-Tetrachloroethane*	0.115	0	0	0	0	--	1.155E-04	1.155E-04	--	--	--	--	See note e
Acrylonitrile*	0.500	0	0	0	0	--	5.023E-04	5.023E-04	--	--	--	--	See note e
Benzene*	0.252	0	0	0	0	--	2.532E-04	2.532E-04	114.2	11.44	0.000	0.000	No
Chlorobenzene*	0.169	0	0	0	0	--	1.698E-04	1.698E-04	--	--	--	--	See note e
Toluene*	0.141	0	0	0	0	--	1.417E-04	1.417E-04	112.5	11.26	0.000	0.000	No
Total xylene*	1.90	0	0	0	0	--	1.909E-03	1.909E-03	1.130	0.910	0.002	0.002	No

Notes

*Non-bioaccumulative; evaluated for direct ingestion only

a - No BSAF values for Naphthalene available for Prey Group; Benzo(a)pyrene BSAF used as surrogate

b - No BSAF values for PCB-77 and PCB-81 available for Prey Group; PCB-105 BSAF used as surrogate

c - No BSAF values for PCB-123 available for Prey Group; PCB-126 BSAF used as surrogate

d - No BSAF values for 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene Group 1 Fish; hexachlorobenzene used as surrogate

e - Not assessed due to lack of available effects data (i.e. TRV)